



# American Forestry

VOLUME 28

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ALASKA'S INTERIOR FORESTS



FORESTRY IN GEORGIA



THE EYES OF THE FOREST



FOREST RECREATION



A FOREST INDUSTRY OF VERMONT



NOVEL TREES AND FOREST PRODUCTS



PARASITES OF TREES AND PLANTS

# The American Forestry Association

## Washington, D. C.

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IT IS A VOLUNTARY organization for the inculcation and spread of a forest policy on a scale adequate for our economic needs, and any person is eligible for membership.

IT IS INDEPENDENT, has no official connection with any Federal or State department or office, and is devoted to a public service conducive to national prosperity.

IT ASSERTS THAT forestry means the propagation and care of forests for the production of timber as a crop; protection of watershed; utilization of non-agricultural soil; use of forests for public recreation.

IT DECLARES THAT FORESTRY is of immense importance to the people, that the census of 1912 shows our forests annually supply over one and a quarter billion dollars' worth of products;

employ 725,000 people; pay \$267,000,000 in wages; cover 850,000,000 acres unsuited for agriculture; regulate the distribution of water; prevent erosion of lands; and are essential to the beauty of the country and the health of the nation.

IT RECOGNIZES THAT forestry is an industry limited by economic conditions, that private owners should be aided and encouraged by investigations, demonstrations, and educational work, since they cannot be expected to practice forestry at a financial loss; that Federal and State governments should undertake scientific forestry upon National and State forest reserves for the benefit of the public.

IT WILL DEVOTE its influence and educational facilities to the development of public thought and knowledge along these practical lines.

## It Will Support These Policies

National and State Forests under Federal and State Ownership, administration and management, respectively; adequate appropriations for their care and management; Federal co-operation with the State, especially in forest fire protection.

State activity by acquirement of forest lands; organization for fire protection; encouragement of forest planting by communal and private owners, non-political departmentally independent forest organization, with liberal appropriations for these purposes.

Forest Fire Protection by Federal, State and fire protective agencies, and encouragement and extension individually and by co-operation; without adequate fire protection all other measures for forest crop production will fail.

Forest Planting by Federal and State governments and long-lived corporations and acquirement of waste lands for this purpose, and also planting by private owners, where profitable, and encouragement of natural regeneration.

Forest Taxation Reforms removing unjust burdens from owners of growing timber.

Closer Utilization in logging and manufacturing without loss to owners; aid to lumbermen in achieving this.

Cutting of Mature Timber where and as the domestic market demands it except on areas maintained for park or scenic purposes, and compensation of forest owners for loss suffered through protection of watersheds, or on behalf of any public interest.

Equal protection to the lumber industry and to public interests in legislation affecting private timberland operations, recognizing that lumbering is as legitimate and necessary as the forests themselves.

Classification by experts of lands best suited for farming and those best suited for forestry; and liberal National and State appropriations for this work.







# AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

PERCIVAL SHELDON RIDSDALE, Editor

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## "THE HALL OF FAME FOR TREES"



THE TWIN COPPER BEECHES IN GEORGETOWN CONVENT GROUNDS

Magnificent specimens of one of our most beautiful trees, and looking like one large tree with a crown like an immense copper dome. They must have been in their prime during Civil War days and bear many marks, dates and initials. Their respective circumferences are 13 and 11 feet. They stand in the grounds of Georgetown Convent at Washington, D. C., and have been nominated for the Hall of Fame by Mrs. Mary A. Easby-Smith, historian of the convent alumnae. (See page 495.)

# AMERICAN FORESTRY

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## ALASKA'S INTERIOR FORESTS

By John D. Guthrie

THE forests of interior Alaska are enormous in extent. Their total area has been estimated all the way from 80 millions up to 150 million acres. They are on the unreserved, public domain of the United States, and so far have been given little or no administration, or any protection from fire. Although the present commercial value of this large area of Government timberland is comparatively small, the value of these forests in the future development of this immense region is hardly possible to measure. Alaska as yet has not even the full status of a territory, and thus the title to approximately 99 per cent of its immense area still remains in Federal ownership. She has not yet been the recipient of large grants of Government land as was the case with all the public-land States and Territories. In the consideration of a forest policy for the nation this immense Government-owned forest area should not be overlooked. It is the Government's business to protect these lands from uncontrolled forest fires, against the time when they will be vitally needed, not for use in the States, but in the development of both mineral and agricultural lands of the interior, which development is sure to come.

The interior of Alaska is still largely an undiscovered country. Exact data concerning the forests of the great interior basins are not yet available. Here is an area comprising not less than 300,000 square miles, or 192,000,000 acres, of which only a few townships have been surveyed. From the time of the Russians many men have passed over portions of this immense area, but they all

have been interested mostly in the mineral wealth of the country, what was in the ground, and not with what grew on the surface. Men have gone into the heart of Alaska primarily for fur and for gold, not for timber. The records they have made do not deal with the acreages of forest land, the geographic range of tree growth, the total stand of timber, the loss by forest fires, or the area burned over—things which a forester would be most interested in; these therefore must be approximations.

There are, however, certain broad statements that may be made concerning the interior forests of Alaska which may not be disputed. These are that there is a very extensive area bearing forest, much of which is of saw timber size; that the tree species have been pretty accurately identified; that the forest area has been very extensively

burned - over; that the forest has played a very important part in the development of the country; and lastly, that apparently it has not been of very much interest to anyone whether the forests were burned or not.

Of Alaska's coast forests approximately 90 per cent is included in two National Forests and these have

been under administration since 1902. Her two National Forests have been self-supporting practically from the date of their transfer to the Forest Service in 1905. These coast forests will undoubtedly become within a comparatively short time an important factor in exports of pulp and paper to the United States. It is not believed however that the interior forests will furnish products that will ever prove feasible or practicable for export outside of the Territory of Alaska, nor would such a



BIRCH AND ASPEN FOREST NEAR EAGLE, ON THE YUKON

The interior forests are for the most part of the woodland type and comparable to the forests of northern Maine and eastern Canada, both as to species and mixture.



movement be advisable, for it is believed that every acre of the interior timber will be needed for internal development which must come to the interior basins of Alaska's great river systems.

The forests of interior Alaska are practically confined to the great basins of the Yukon and Kuskokwim Rivers. Some idea of the size of these areas may be judged when it is stated that the drainage basin of the Yukon, the fifth river in size in North America, embraces 330,000 square miles (of which slightly less than one-half is within the Territory), while that of the Kuskokwim covers 50,000 square miles. It is probably not generally known that the United States owns forests within the Arctic Circle, yet the range of tree growth in central Alaska extends up the Chandlar and tributaries of the Porcupine Rivers, or 2 degrees inside the Arctic Circle.

The interior forests are for the most part of the woodland type and are fairly comparable to the forests of northern Maine and eastern Canada, both as to species and mixture, though inferior as to quality. Of the estimated 150,000,000 acres of interior forests, there are probably 75,000,000 acres which bear timber of sufficient size and quality to make it of extreme value for cordwood, sawlogs, boat building, mining operations, farm use, and other needs of a pioneer region.

The principal tree species represented in the interior forests are white spruce, white birch, balsam poplar, black cottonwood, aspen, black spruce, and tamarack or larch. Of the above species the white spruce is by far the most important tree. White birch is widely scattered and comprises a large percentage of practically all stands. Black spruce, while fairly abundant is confined largely to muskegs and swampy areas and is of little value. Poplar and cottonwood are abundant along streams while aspen with white birch usually forms the tree cover at timber line.

The stand of the interior forests varies greatly with

the exposure and the elevation above sea level. Broadly speaking, the valley floors of the Yukon and its main tributaries, as well as the Kuskokwim, the Copper, the Chulitna and the Susitna Rivers are timbered with fairly heavy stands of white spruce, white birch, and cottonwood. As one leaves the valley floor and begins to go up the slopes, the forest becomes scattered and the trees become shorter and more limby, until an average elevation of some 2,000 feet above sea level is reached

when tree growth ceases. There is forest practically along the entire line of the Government railroad from Anchorage to Fairbanks (353 miles), except immediately in Broad Pass and except where the timber has been entirely destroyed by extensive fires. One authority on Alaska conditions estimates that there are 8,600 square miles or 5,504,000 acres of merchantable saw timber in interior Alaska, and that this would average not less than 5,000 board feet per acre. On this estimate there would therefore be a total of 27,520,000,000 feet board measure of merchantable saw-timber; the above estimates do not include timber suitable only for fuel and mining purposes, such as stulls and lagging.

Timber line in the Yukon basin is placed about 2,500 feet above sea level. There is a scarcity of vegetation on the high ridges while in some of the larger valleys of tributaries to Tanana River the heaviest stands of timber are found. A striking feature of the range of tree growth is found in the contrast between the upper reaches of tributaries of the Yukon and those of the Tanana. Those of the Yukon, for the most part, are relatively bare, while those of the Tanana are well timbered from their heads.

The climate is characterized by long, cold winters and short, hot summers with almost continuous sunlight, and with a rainfall averaging less than 15 inches. As is to be expected from a region in this latitude all tree growth is slow. A maximum temperature of 95 degrees Fahrenheit has been recorded in the Yukon basin, and



THEY GRADUALLY DISAPPEAR

The forests along the valleys run out as the slopes are ascended, the heavy stands of white spruce, white birch and cottonwood becoming scattered and the trees shorter and more limby until at an average of 2000 feet above sea level, tree growth practically ceases. These mountains are a part of the Wrangell Range.



on specially favored sites annual plant life becomes almost tropical during the long days of the Arctic summer. Actual measurements of tree growth, however, show a far more rapid rate of growth than one would expect, a growth that compares very favorably with similar tree species in the northeastern portions of the United States.

The bulk of the timber cut in interior Alaska is for firewood, probably several times as much timber being used each year for fuel as is used for lumber. Wood has furnished the country with heat, light and power, though now native coal (largely lignite) is coming to be used. The completion of the Government railroad which traverses a country rich in coal deposits is responsible for this. The interior forests have supplied several sawmills with logs. Spruce has been sawed for many years at the several small mills in the interior. The chief uses of lumber from these mills has been for flume and sluice boxes, boat building, and houses and business buildings in the towns. The portion of the Government railroad from Anchorage to Fairbanks, a distance of some 353 miles, has been laid on ties cut from the forests along the right of way. The local timber has also been used almost entirely for camps and general construction work on the railroad, most of the heavy timber for temporary bridges, however, having been shipped in from Puget Sound.

Even with the most careful handling the forests of in-



SPRUCE FLAT ALONG NENANA RIVER

This is north of Healy, near the line of the Government railroad, now completed. There is forest along nearly the entire line of this road from Anchorage to Fairbanks—353 miles.

terior Alaska will probably not fully supply the future needs of the country. Alaska is a country of vast distances and a scanty population, and wood, always an essential product everywhere in a new country, will be needed in enormous quantities. The availability of a timber supply close at hand will make sure the establishment and building up of the chief industries of the interior country, mining and agriculture. Interior Alaska has a climate not dissimilar to that of the Dakotas and with its agricultural possibilities, already proven at Fairbanks and in the Mantanuska Valley, there will come a population commensurate with her resources. In the Tanana Valley alone there are estimated to be 1,000 square miles of land suitable for agriculture.

Owing largely to uncontrolled forest fires, the pinch for timber that is readily accessible is being felt already in the Fairbanks region. Timber suitable for boat and building purposes has to be rafted from 25 to 60 miles, cordwood of second-growth birch being more accessible. The economic importance of Alaska's interior forests must grow with the development of her mining and agricultural industries.

Even if it were never to be needed for local development, owing to its smaller size and relatively inferior quality, the timber of the interior forests can never compete as lumber with either the large timber of Alaska's coast forests or with that from the Pacific Coast



TYPICAL OF FOREST CONDITIONS

Open forest of white spruce in the Broad Pass region. Small lakes, of crystal clearness and beauty are found in this region. It is a vital necessity that the Government take measures to protect—first from fire—the interior forests of Alaska which are destined to play so important a part in her commercial and economic development.



PAXSON'S ROAD HOUSE

Comfortable road houses are found along the Richardson Trail, which is the road of 320 miles from Chitina, on the Copper River railroad to Fairbanks.

States. It has been seriously urged that the interior forests present great opportunities for an export trade in the manufacture of pulp, or for the location of wood-using industries, furniture plants, or other minor forest products. The species composing the interior forests are admirably suited for pulp, and are the same species that have been used by eastern pulp and paper makers for many years. However, the cost of transportation, the enormous area of forest land involved, and the absence of very large stands of timber in compact bodies, would make the plan of utilization of these forests for pulp export entirely too chimerical.

Alaska's interior forests are found along her stream valleys where they will be accessible to the mineral (quartz) development in her hills and mountains and handy for use in bringing under cultivation her potential farming lands. A large area of forest along the valleys will undoubtedly be either destroyed by placer mining operations or be cleared for agriculture, since the best tree growth occurs on the best agricultural soil. This will reduce very materially the total forest area, thus necessitating the safeguarding and protection from needless burning of the remaining forest lands.

It is believed that the interior forests of Alaska are hardly holding their own against the annual loss in volume due to uncontrolled fires. That 25 million acres of these forests have been burned over seems a not unreasonable estimate. Millions of acres have been burned over two or three times leaving an utter waste. It has been said that ten times as much timber has been burned in the Fairbanks region as has been cut for fuel or lumber. Former Chief Forester Graves estimated in 1915, after a trip through central Alaska, that in the previous 20 years forest fires had burned over an average of one million acres per year in interior Alaska, and that in

1915 alone several million acres were burned. Travelers through the interior during the summer months are certain to see numerous forest fires burning and find no attempt being made to control or extinguish them.

As typical of the situation, the writer saw a forest fire north of Copper Center on September 3, 1920, that had covered several hundred acres and that was said to have been burning since June; between Chitina and Fairbanks, a distance of some 320 miles, he saw on this same trip not less than eight forest fires burning along the Richardson Trail. Passengers on the new Government railroad during the dry season report a string of fires starting from sparks from the locomotives.

There is no agency, governmental, territorial or private, that realizes its responsibility for the protection of the interior forests from fire. Fires are not fought unless they threaten someone's private property. In a region with less than 15 inches of rainfall and under practically 20 hours of sunlight each day for four months each summer, the interior forests become very inflammable,



CONSTRUCTION WORK UNDER WAY

This is a clearing along the Government railroad right of way, showing one of the construction camps.

and a spark in the dry moss may start a fire that may cover thousands of acres, before burning itself out on the edge of a muskeg or being put out by the fall rains.

To meet the future demand for wood and in order to remedy the damage done by fire it has been seriously suggested that the Government should undertake replanting of the burned areas. Artificial reforestation of denuded areas is an expensive undertaking in the States where labor costs are lower, transportation available and climatic factors most favorable for tree growth. In the interior of Alaska, with short, hot summer seasons and long, cold winters, and with labor scarce and high, artificial reforestation is entirely impracticable.

The sure way to provide a fuel and lumber supply for interior Alaska's present and future needs is to keep fire out of the forests that nature has already grown there. Under Alaskan conditions the best way to grow forests is by preventing forest fires.

As a national duty it is imperative for the Federal Government, the owner of the lands involved, in cooperation with the Territory of Alaska and its residents, not only to stop forest fires but to keep fire out of the interior forests in the future. The prevention of forest fires is therefore essential as well as the suppression of fires that start. With a sparse

population, immense distances to cover, with trails and roads few and far between, the fighting of forest fires after they start is an extremely difficult matter, and in many cases impossible; the best way to fight forest fires in interior Alaska is not to let them start.

In suggesting any plan for the protection from fire of the forests of interior Alaska certain fundamental facts of Alaskan conditions and human nature must be recognized. Briefly, these are:

1. The interior of Alaska has a sparse and scattered population, living largely under pioneer conditions and with the pioneer's point of view regarding natural resources.

2. Such being the case the protection of the forests from fire must come through an awakened public sentiment. The pioneer population must be brought to realize that it is to their immediate interest, as well as to succeeding generations, to use but also to protect from

criminal neglect and waste a natural resource without which prosperity can not long remain in any country.

3. In short, the prevention of forest fires must be driven home. As a practical problem the suppression of fires after they are started is secondary for the interior population is insufficient or too widely scattered to provide an absolutely effective suppression force in the ordinary case.

4. To remedy the situation and to fix clearly the responsibility there should be on the ground a small protective organization; this to consist of a forest supervisor or fire warden with a force of forest rangers and patrolmen, in touch with public sentiment, to the end that the need for forest protection may be brought home. The mere presence of such an organization in the country will help tremendously in the prevention of fire.

5. The duties of this organization should be essentially fire prevention and fire patrol, rather than fire suppression, though they should extinguish all fires in their res-

spective districts wherever it is possible to do so. Under interior Alaska conditions it is not believed that it is possible to secure a sufficient force of men to put out all forest fires that start; it is believed entirely possible and feasible to arouse public sentiment to the point where the large majority

of the population will do their utmost to prevent forest fires. No plan of protection can succeed without the support of the local people.

6. Full and hearty cooperation in the work of bringing forest fire prevention before the public by all existing Government agencies in the interior of Alaska is imperative; until this is brought about all efforts to secure public support for the prevention of forest fires are futile.

7. The interior forests should not be withdrawn from entry for National Forest purposes, nor included within a National Forest, nor should their existing status be changed in any way, other than that it would appear logical that their protection from fire should be delegated to the Government service, whose special function is the protection and administration of Federal forest lands.



AT THE NORTH END OF BROAD PASS

Smoke from a forest fire burning along the Government railroad right of way is seen in the distance. It is believed that the interior forests of Alaska are hardly holding their own against the annual loss due to uncontrolled fires.



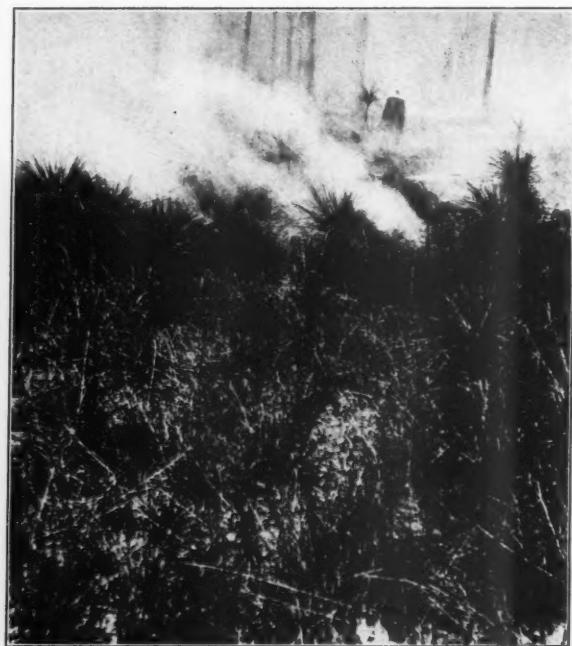
# FOREST FIRE PROTECTION IN GEORGIA

By J. G. Peters, United States Forest Service

[An address by J. G. Peters, Chief of the Branch of Forest Management, United States Forest Service, before the Georgia Forestry Convention, at Macon, Georgia, June 9, 1922.]

ONE of the urgent matters demanding the attention of all Georgians at this time is to what extent the lack of forest protection affects the economic life of the Commonwealth. Your forests are among your great natural resources. They have supplied a variety of products not only for use in the upbuilding of Georgia, but they have as well been the means of bringing wealth into the State from the outside. Yet Georgia is fast reaching the point where it will have to go outside for some of its wood materials, because the State has not yet taken steps to make sure that all of its needs of this nature should be sup-

plied within and a tidy balance left for distribution elsewhere. We are a wood-using people. We have become accustomed to using wood wherever it will serve our purpose, to using it lavishly, and to using the better grades, and we simply cannot get along without it. Therefore, when Georgia ceases to be self-sustaining in lumber and other forest products, as will certainly be the case unless timber depletion in the State is checked, you will have to go outside, and you will go outside, to other forest regions, very probably to the Pacific Coast, for that is where the last big supply of timber remains. And you will accordingly pay the freight. Under present lax methods of caring for our forest lands, the day of cheap lumber and cheap forest products has gone. The price is increasing as the supply dwindles.



FIRE ON LONG-LEAF PINE LAND

Note how the undergrowth, which is full of pine seedlings, is furnishing the best fuel for the flames.

What about the dependence of your farms upon the forests? The farmers are our greatest users of wood. As you go through this Southern country, how many dilapidated farm buildings do you see, buildings unpainted, rotting, falling to pieces. How are you going to house and equip the hundred-thousand settlers you are urging to come to Georgia, if you cannot house and equip the farmers already here? I have heard the industrial agents of some of your railroads tell of the difficulties of diverting the stream of immigration from the West and North to the South. And this is in spite of your wonderful attractions. Would not cheaper lumber be a tempting bait?

The number of farms in this State, according to the 1920 census, is about 311,000. It has been estimated that the lumber requirements of the average efficiently run farm for upkeep and improvements is 2,000 board feet yearly. This would mean, therefore, 622,000,000 board feet yearly for this State, which exceeds your present yearly consumption of lumber for all purposes and is more than 80 per cent of your present yearly lumber production. Bear in mind that these 622 millions would represent your requirements for the upkeep and improvements of farms alone, and that this estimate is based on



ONCE SWEEPED BY FIRE

While many of the long-leaf pine on the fire swept area survive their growth will be seriously checked.

the average farm for the entire country. But will Georgia be content merely with the average farm? I think not. The South is on the eve of a great agricultural awakening. Surely you are not going to let Georgia sleep by the wayside for want of a fundamental necessity in the economic life of the farm.

What about the moving of your peach crop? The fruit grower must have wooden containers. It was estimated



that last year five million of these containers were used in this state. With young orchards coming constantly into bearing, your needs in this respect are bound to increase. Where is the lumber coming from to make these containers? From Georgia or from somewhere else? It is for you to choose.

And what about your ever-increasing crops of vegetables? Why, this State is a veritable bursting land of plenty. But what's the use of raising all these good things if you are going to be curtailed in shipping them to the markets?

Do you know that the per capita lumber consumption of Georgia is among the lowest of the States? This is indicated by preliminary computations lately prepared in the Forest Service. It is far below that of the big agricultural States of the West and is even below that of the small, manufacturing States of New England. It is nearly in a class with the per capita consumption of those European countries where wood is a luxury. Surely this cannot continue in Georgia where the possibilities for growth and de-



PROTECTED FROM FIRE

Showing how quickly the long-leaf pine progresses when the young growth is protected from fire.

velopment are unlimited. Some day you will use several times the quantity of lumber you are now using. Are you going to anticipate this and provide for a supply at home, or will you follow the example of the Lake States and permit timber depletion to continue unchecked and then after your supply has dwindled, be forced to bring lumber from the Pacific Coast or perhaps from Siberia?

Georgia's lumber production declined from one and one-third billion feet in 1909 to less than 900 million feet in 1919, or 33 per cent. A very significant thing about this de-

crease in production is that it took place in the face of an increase in population which one might expect ordinarily to be accompanied by an increase in demand. A further decline from the 1919 figure occurred in 1920 amounting to 15 per cent. Your naval-stores industry has been waning in the past 20 years to the extent of approximately 75 per cent, and from the leading State in this great industry, which is confined exclusively to the South, Georgia is dropping to a place of insignificance.



AFTER A FIRE ON LONG-LEAF PINE LAND

Note the burnt stubs of young pines, showing how the fire not only kills the well grown trees, but destroys new growth so that the land unless artificially reseeded is no longer productive.

All this in face of the fact that the forest industries of Georgia rank third in importance among the manufacturing industries of the State. They represent an invested capital of some \$41,000,000; they employ 31,000 people; and they turn out \$66,000,000 worth of products annually. Are you going to let your forest industries decline still further for want of a supply of raw material? Are you going to forego the tax revenue which they bring into your State and local treasuries?

The only satisfactory answer to these questions is to grow more wood. Of all the regions in this country there is none that can compare with the South in the climatic and soil conditions for producing readily and quickly timber supplies of great value. This is not realized in this State by many. You do not appreciate the possibilities and value of the young, fast-growing trees with which this region is favored. If you did, you would not permit fires to run through the State from one end to the other and burn up millions of these little trees every year.

In this State in the six years from 1916 to 1921, inclusive, there were reported to the Forest Service 23,000 forest fires, nearly double the number reported in any other State. Ninety-two per cent of these fires resulted from carelessness or from design; 8 per cent from lightning, the only agency that cannot be controlled. Twenty-six per cent were of incendiary origin, 21 per cent from causes unknown, 16 per cent from brush burning, and the remainder were caused chiefly by campers, lumbering and railroads.

These fires burned over about 6,000,000 acres, or almost a third of the State's forest land area, and caused a money loss to timber and improvements alone of \$5,-

500,000. These figures are conservative; they are incomplete, because of the difficulty of securing statistics of this character where no protective organization exists in the State which could collect them. If to these direct losses are added the losses which cannot very well be measured in dollars and cents, such for example as the destruction of small trees, the killing of game, the drying up of fishing streams, the burning up of soil fertility,

the removing of the ground cover from mountain lands, which makes it possible for erosion to follow and silt to be deposited in your river channels, and the rendering and keeping idle an area estimated to be 5,000,000 acres of forest land in this State, you can readily see that the total damage reaches a staggering figure. Rome is burning, ladies and gentlemen, as you of this State sit by and fiddle.

Obviously the thing to do, the thing which a number of other States have done, is to put a stop to the practice of promiscuous and broadcast burning of the woods. Some people say that it cannot be done, that it is a part of the very life of the people, is in fact regarded by many as an inalienable right, and that it is inevitable. But it can be done, because it is already being done. I would hate to think that the situation in Georgia is any worse than it used to be in East Texas and in Louisiana. Yet a big gain is being made in



SECOND GROWTH LONG-LEAF PINE

This was reproduced naturally and protected from fire. Age: 40 years. Height: 70-80 ft. Diameter (breast high): 10-14 inches. Yield per acre: About 15,000 board feet of lumber, or about 50 cords of pulpwood, in addition to from 100 to 200 turpentine cups. This illustrates what young growth will do if protected. Its value is steadily increasing.

the progress of stopping forest fires in those States. Let Georgia take its cue not only from these two States, but as well from North Carolina, Tennessee, Virginia, West Virginia, Maryland and others, from the no less than 27 States all told which have seen the practical value of stamping out the forest fire menace. All of these have recognized their responsibility to aid in providing tim-

ber supplies for their citizens for all time. The Federal Government also has recognized its responsibility in the matter. Eleven years ago Congress passed a law authorizing the Forest Service to cooperate with any State which had established a forest fire protection system and would expend for the purpose at least as much as the Federal Government would expend. The best indication of the effectiveness of this cooperation has been its growth. The first year less than a dozen States could qualify under the law; today the number has increased to 27. The State appropriations made yearly for forest fire protection have increased in the meantime from \$250,000 to \$1,750,000. The Federal government spent the first year less than \$40,000; today it is spending \$400,000 and asking for \$1,000,000. This Federal fund is allotted to the States on the basis of the greatest good to the greatest number. States which have the most difficulty in helping themselves are given relatively the most assistance; they are stimulated to further effort. This is generally the case with beginners, and in many instances their appropriations have been duplicated with Federal funds. The combined State and Federal fund is used for the maintenance of a protective system operating under State laws and on private and State lands on the forested watersheds of navigable streams.

Many of these systems are developed to a high degree of effectiveness which results in the accurate location of fires and their prompt control. The backbone of the system is the local warden or patrolman who travels the wooded districts preaching and warning against promiscuous burning. Their activities are coordinated and directed by a chief warden who is usually the State Forester. As you can readily see, the organization of such work is along simple lines; it is not complicated. Still, it requires initiative, and therefore much depends for effectiveness upon the individual members. The big job of a protective system is to educate the public, to create a sentiment against forest fires. This would be particularly the case in Georgia as it has been, and still is to a considerable degree, in other southern States. To teach the people that promiscuous burning of the woods is a menace to the welfare of this State is the big problem.

Forest fire protection is a business proposition. It requires the expenditure of money to be undertaken successfully. It requires the participation of the public as represented by the State and Federal governments, because it is a public problem. Will not Georgia make it possible at this time for the Federal Government to join hands with her in helping to solve the forest fire problem in this State?

**A** forester should stand the life in the woods like a tree, and should stand the knocks in the mill like a log, lest he go to waste like the culls.—*LaSal Salvo*.

## SUMMER IN CALIFORNIA

By Fannie K. Lyle

When the summer days are lengthening  
And the hills are turning brown,  
When the harvest wealth is strengthening  
And the air seems golden down,

Come where our sunkissed mother  
To the blue lifts up her hills;  
O, the beauty of no other  
Land so satisfies and thrills.

O, the freshness of the morning!  
The radiant, happy noon!  
The flowers the fields adorning!  
The wild bee's dreamy tune!

The blood-red boled madrona  
Flaunts gaily by the streams,  
And upon the rounded hilltops  
The live-oak glints and gleams.

Hark! A medley of bird voices,  
Then all is hushed and mute;  
Now a meadow lark rejoices,  
Its throat a mellow flute.

And when evening's shadowy fingers  
Scatter dusk the vales adown,  
The golden sunlight lingers  
Upon the hilltops brown.

O, hear the quail's quick calling,  
"Come home, come home to rest,"  
When the shades of night are falling  
Over her hillside nest.

Lo! Through a canyon narrow,  
Bright glows the twilight star,  
And the notes of a song sparrow  
Sound softly from afar.

## A HOUSE CUT TO SAVE A TREE

**I**N order to save the trees surrounding the Scanlan home on Main Street, between Calhoun and Pierce Avenues, it was necessary to divide a house being moved from the old B. F. Bonner home at Main and Calhoun, says the *Houston Post*.

The case went into court before Judge Charles E. Ashe, when the Scanlan estate sought an injunction to prevent damage to the trees because of moving the house. The only means of accomplishing this was to divide the building.



## DR. HENRY S. DRINKER HONORED

**D**R. HENRY S. DRINKER has been appointed a member of the Forest Commission of Pennsylvania, succeeding the late Dr. J. T. Rothrock. Dr. Drinker who was sworn in on June 26 was urged by Governor Sproul to accept the appointment and did so in the same spirit of helpfulness which has marked his many years' interest in the cause of forestry to which he has given so much of his time and ability.

Dr. Drinker is a former president and for some years has been a director of the American Forestry Association. He is president of the Pennsylvania State Forestry Association, and a member of the Forestry Committee of the Chamber of Commerce of the United States.

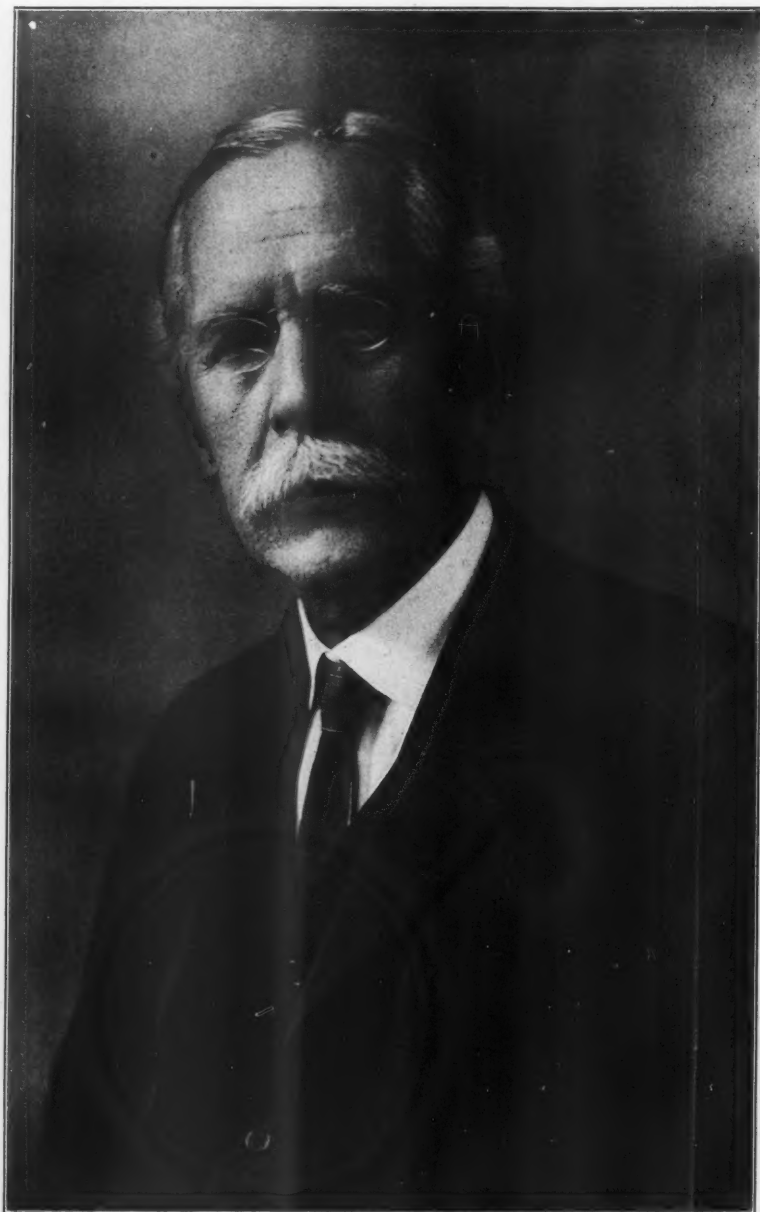
Besides filling the duties of these several offices Dr. Drinker has been a hard worker on forestry committees, has made an exhaustive study of forest taxation, and has been notably active in furthering forestry in every way he could. As a member of the Forest Commission of Pennsylvania he will be adding to his many duties but he does so in the spirit which is so characteristic

of him, the spirit of willingness to do whatever he can to secure forestry legislation, to broaden the public appreciation of forestry needs and a knowledge of our for-

estry requirements, to advance forest conservation, to provide for the perpetuation of remaining forests and to promote forestry for the benefit of the people.

In his official capacity he will be able to do much to aid in carrying on the already well advanced and excellent

program of forestry in Pennsylvania. His approval of appropriations will have great weight with the state legislature and his endorsement of forestry legislation for the state will warrant the support of both the upper and lower house. The fact, too, that his appointment was heartily approved by Gifford Pinchot, whom it is generally conceded will be elected Governor of the state this fall, means that he will be in a position to accomplish a very great deal for forestry. The appointment of Dr. Drinker was greeted with particular commendation by the newspapers of the state and by the friends of forestry, and it is certain that he will have the earnest and energetic support of the press in advancing any forestry development which he believes will be to the benefit of the great Commonwealth of which he now is an official. The mem-



DR. HENRY STURGIS DRINKER

Appointed by Governor Sproul, of Pennsylvania, a member of the Forest Commission of that state to succeed the late Dr. J. T. Rothrock.

bers of the American Forestry Association wish him every success possible in this, his new undertaking for forestry and for his State.



# THE EYES OF THE FOREST

By Wallace Hutchinson

EVER since the time when the descendants of Noah undertook to build a tower reaching unto heaven on the plains of Shinar, the people of this world have instinctively sought high elevations from which to look out over the earth. Thus in the olden days kings viewed great battles from the crests of hills, and watchmen were set in high towers to guard cities from the menace of flood or fire. Even in our own time the lure of height, as exemplified by the Eiffel tower, Woolworth building, Washington monument, and numberless high mountain peaks, annually attracts thousands of visitors.

It is but natural, therefore, that the United States Forest Service, charged with the administration and protection of more than 156 million acres of National Forests, located for the most part in the rough and inaccessible mountain regions of the West, should early develop a system of forest fire detection based upon lookouts placed on high elevations. More than 500 such eyes of the forest now dot these great Federal reservations—in the White Mountains of New Hampshire; the Appalachians and Ozarks of the South; the Lake States; the Rocky Mountains and the Cascade, Sierra Nevada and Coast Ranges of the Pacific.

The evolution of the fire lookout forms an interesting chapter in the history of the development of our National Forests. When a number of these public areas, containing vast timber, water, and forage resources, were first set aside two decades or more ago for the perpetual use of the American people, little thought was given to their protection. This was due largely to the lack of adequate funds and trained personnel to combat fires. But in 1905, following the transfer of the National Forests by President Roosevelt from the Depart-

ment of the Interior to the Department of Agriculture, and the creation of the Forest Service, a new era was inaugurated. Since that time, fire control has been given precedence over all other work by Uncle Sam's foresters, and an efficient system of detection and suppression developed which has materially reduced the annual fire loss in all Government forests. In 1920, for example, out of a total of 6,078 fires on the National Forests, 80 per cent were discovered and extinguished before they had covered 10 acres each. Fire lookout stations played a large part in these results.

In its early efforts to check the ravages of fire, the Forest Service established an extensive system of

ground-patrol of the forests. Definite routes of travel were laid out and men called "smoke-chasers" employed to patrol these beats. In the course of their duties, these men found that by visiting prominent elevations it was possible to view large areas of forest, which would otherwise be unprotected, and detect smokes which could not, ordinarily, be "spotted" from the trails running

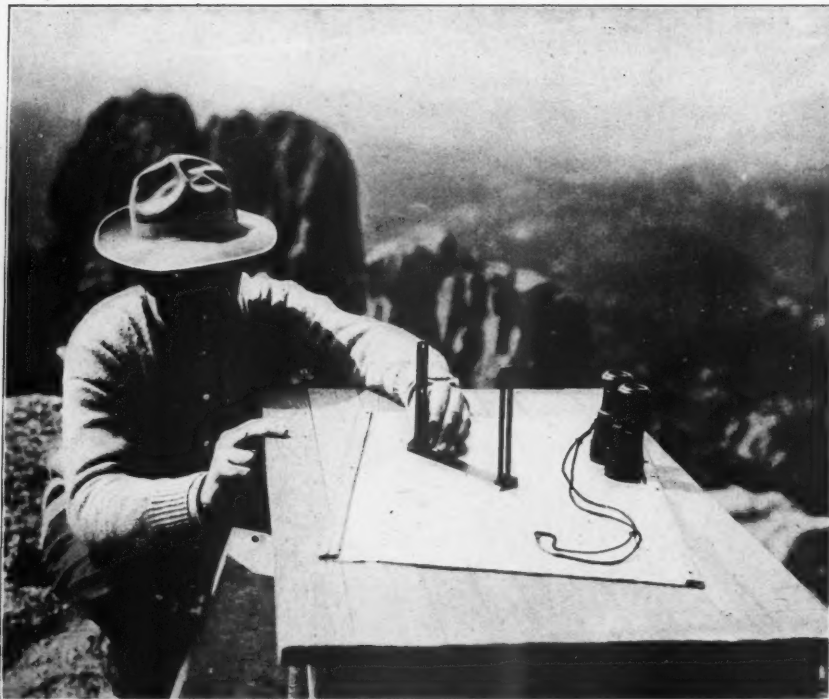


A PRIMITIVE LOOKOUT

This is the most primitive style of fire lookout—a rocky point on the Olympic National Forest in Washington, from which large areas of forest are visible.

through the dense timber. This led in time to the building of rough ladders to the tops of high trees, the construction of rude log towers, and the selection of isolated peaks as observation posts. Thus the idea of lookouts for fire detection gradually developed.

It is not such a far cry from the days when smoke-chasers climbed to the top of some hill to sweep the mountains with their glasses, to the highly developed lookout stations of the present day. A period of less than 10 years covers the marked progress that has been made in this method of fire detection. During this time it was found that the highest mountains did not always make the best lookouts; that observatories must be pro-



NEAR THE TOP O' THE WORLD

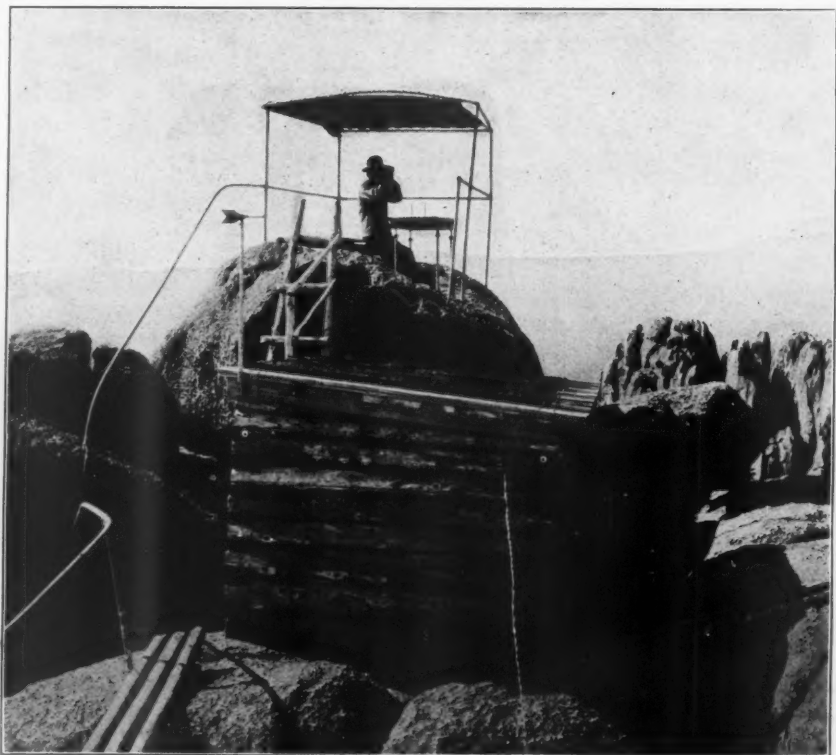
This is the next step in the evolution of a lookout; a temporary station equipped with wooden table, map, and crude instrument (alidade) for sighting "smokes," but unprotected from the elements.

tected from lightning; that an efficient system of communication with the outside world was of first importance; that instruments of precision and good maps were necessary for the accurate locating of fires, and that care should be taken in selecting officers well qualified to fill the exacting position of observer.

The most elementary form of fire lookout was an observation point on the summit of a hill, or in the top of a high tree reached by ladders. Next in order came a rocky peak or a roughly constructed log tower, equipped with a table on which could be placed a map of the forest and a crude alidade used for locating smokes. These were all classed as temporary stations, unprotected from the elements, and visited only occasionally by patrolmen or rangers. It was soon discovered, however, that such lookouts did not afford the forest any great degree of protection, since between the hours of observation it was possible for a fire to start and gain considerable headway before

being discovered. This led to the establishment of semi-permanent lookouts, where the observer usually lived at the foot of the mountain and spent a part of each day on the summit watching for fires. Under such conditions, when a fire was discovered, it was necessary for him to ride or walk to the nearest telephone, perhaps miles away, to report, thus consuming hours of valuable time.

The cold and storms common to high elevations even in mid-summer caused great discomfort to these observers, with the result that steps had to be taken to provide them with shelter. Stone or log houses were, therefore, built on the tops of peaks, awnings were put up over rocky points to protect the men from the sun, and where wooden towers were used a rough shelter was built on top, with board shutters for windows. Much needed telephone connections with the nearest ranger station were also in-



THE LOOKOUT BECOMES ESTABLISHED

Severe weather conditions at high altitudes later made it necessary to build rough log shelters for the observers and to erect awnings to protect them from the heat of the sun. From such crude equipment the efficient lookout station of today has evolved.

stalled, so that prompt reports on the discovery of fires could be made.

In those days it was the common practice for the lookout man to live in his observatory, either going outdoors or up on the roof to make observations. It was not long, however, before it was found that high peaks and lofty towers and trees were very prone to attract lightning during storms. A number of lookout stations were struck by heavy bolts, the interior of the buildings wrecked, and the observers rendered unconscious. Though no serious accidents resulted, forest officers were quick to recognize the fact that lookouts must be protected from lightning, and that it was much safer to have the observer live elsewhere than on top of a peak.

Errors resulting from rough maps and crude instruments used in locating fires, the necessity of going outside the lookout house to make observations, the difficulty of securing men properly qualified for the job of observer and many other factors detrimental to the success of this method of

fire detection, finally led the Forest Service to make a careful investigation of all phases of the lookout problem. The results of these investigations, which covered a period of several years, finally caused the adoption of uniform standards for lookout stations in various parts of the country, and form the basis on which all new National Forest lookouts are now established.

The standard forest fire lookout of the West, to-

day, is a square one-room structure with hip-roof, varying in size from 10x10 to 14x14 feet, set on a stone or concrete foundation or bolted to the rocks, and held in position by stout guys-wires. The four sides of the house, including the door, are made up of large glass windows set with the lower sash three feet above the floor, which allows an unobstructed view in all directions. Lightning protection is afforded by an "electric screen" overhead, or by heavy wires running from the

peak of the roof down all four corners into the ground. A telephone line connects the lookout with the supervisor's headquarters and the various ranger stations of the forest and also with the nearest commercial exchange. Heavy wooden shutters protect the glass windows during storms; and the building is attractively painted inside and out.

The furnishings of such an observatory, or "crow's-nest" as it is usually called, consist of a heavy wooden table oriented by transit survey and securely bolted to the floor, on which rests the fire finder; a high revolving office

chair which permits the observer to view the entire circle of the horizon without getting up; a desk telephone with a head-piece receiver; low cupboards under the windows for maps and forms; a bench for visitors, and a wood or oil stove with which to heat the room during cold weather. A drawer in the table holds paper, ink, pen, and pencils and the official diary, while a pair of high-powered field glasses are kept on top of the table ready



HERE AN ENORMOUS TREE IS UTILIZED AS A LOOKOUT STATION

This is another of the early types of lookout, on the Shasta National Forest in California. The observatory is in the top of a giant tree. For comparative purposes note the man standing by the flag.



for instant use. The most important piece of equipment is the Osborne fire finder, the invention of a Forest Ser-



NOW A PERMANENT STATION

First just a temporary lookout, this was converted into a permanent station by the construction of a stone house which serves as living quarters for the observer. You can see him up in the "crow's nest" looking for "smokes" on the Bridger National Forest, Wyoming.

vice officer by that name, with which the location of smokes is determined. It is in such an observatory that the



THE "LADY LOOKOUT"

The inside of an up-to-date fire lookout observatory on a National Forest, equipped with the latest scientific instrument for the locating of "smokes"—the Osborne Fire Finder, and "manned" by one of Uncle Sam's lady lookouts. The Devil's Head Lookout on the Pike National Forest.



A FIRE LOOKOUT IN AN UNUSUAL LOCATION

This is the most unique forest fire lookout tower in the country, for it is located in the treeless sand hills region of the Nebraska National Forest, where the Government has reforested 5,000 acres of rolling grass lands. Note the fire line—the white streak—and the young plantation of pine trees on the right.



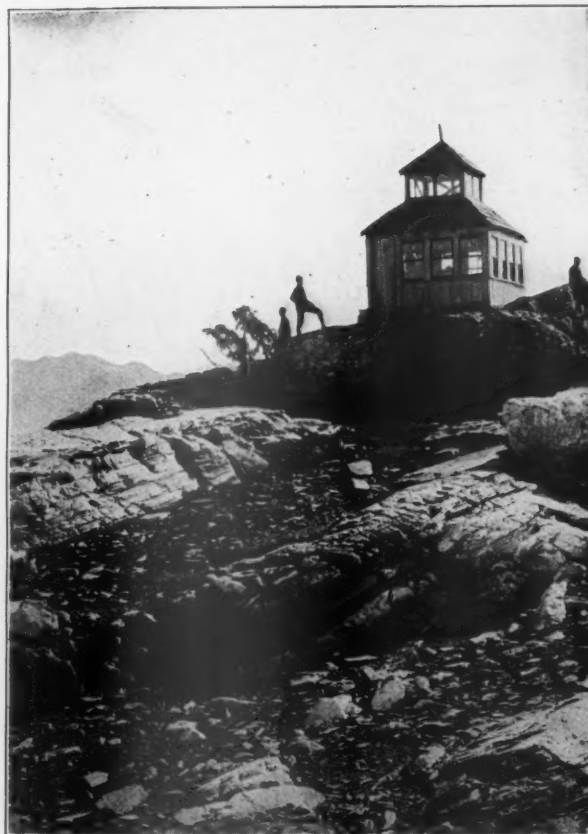
lookout spends all his daylight hours, but he lives in a log cabin located in a sheltered spot a short distance below the summit of the peak.

In the National Forests of the Eastern and Lake States, where the country is flat or rolling in character and there are few mountains, a different type of lookout is used for fire detection. In these regions the problem is to get a sufficient distance above the tops of the trees to be able to see out over the country. Wooden towers built of logs and bolted together were first used for this purpose, but have been supplanted in recent years by specially constructed steel towers. This new type of lookout may vary in height from 30 to 80 feet or more, depending on the flatness of the surrounding country, and be equipped with a glassed-in observatory connected with the ground by stairs, or may have only a small 6x6 screened-in observation platform on top, to reach which the lookout must climb an almost perpendicular iron ladder. Although securely guyed by wires, lookout work on top of one of these "steel spiders" is anything but pleasant, because of the constant swaying of the tower in the wind. The most unique fire lookout tower in the



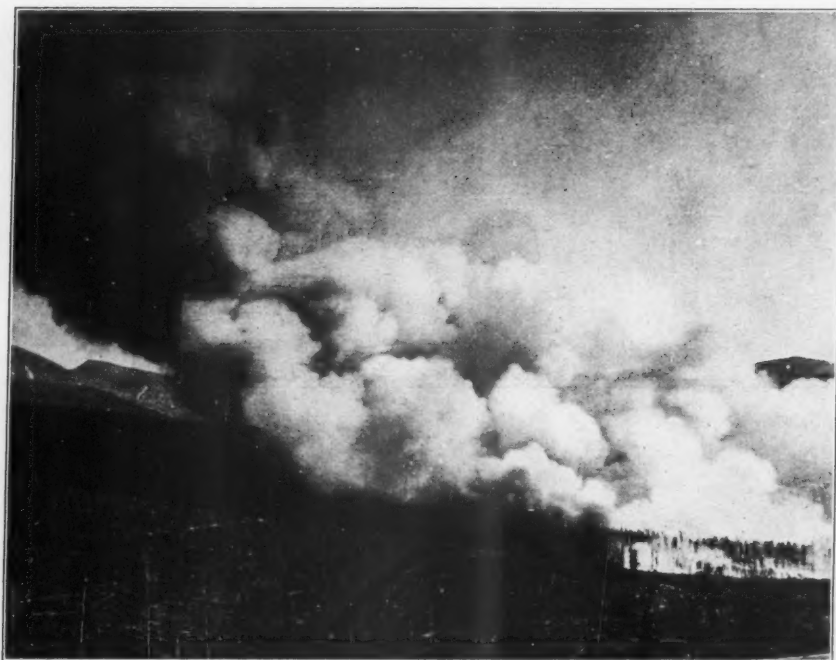
THE OLD WOODEN TOWER TYPE

Wooden towers were much used in the early days of forest fire lookouts. Usually they were built by Forest Service officers.



A STATION OF THE EARLIER TYPE

This is one of the early Forest Service standard fire lookouts. Here the living quarters and observatory are combined in one building—the observatory being reached by a ladder from inside. Glass windows were also coming into use just about then. This is Sourdough Lookout on the Washington National Forest in Washington.



THE RED TERROR OF THE FOREST — FIRE

The "reason why" for all lookouts. And it is to a comparatively small band of men that we look for protection from its ravages. Only because of the wonderful efficiency of these men of the Forest Service, who see to it that the regulations are rigidly enforced, and who are untiringly "on the job," are we often spared the terrific price of carelessness.

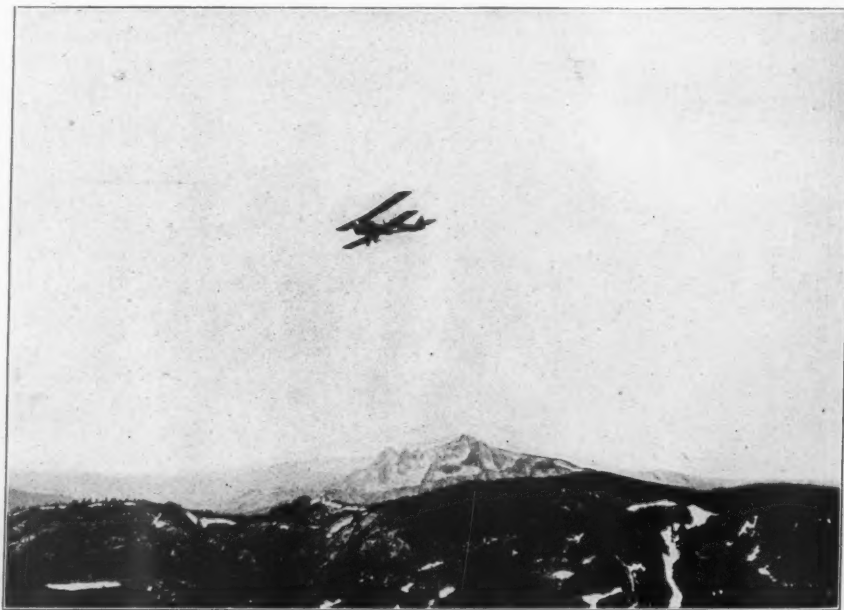
country is that of the Nebraska National Forest, in the vast sand-hills region of that State. Here an observatory has been built on a high hill from which a constant watch is kept over a vast area of rolling grass lands. There are no natural forests in this region to be devastated by fire, for trees grow only along the river banks in the sand hills. But the Government has here undertaken the largest tree-planting project in the United States, and it is to protect some 5,000 acres of pine forest, set out by hand and ranging from 3 to 18 years of age, that this fire lookout is maintained.

With the evolution of the lookout station there has also come a change in the character of its personnel. Rarely now is the old "mossback" type of observer, who knew well the country he was guarding, but was too ignorant to keep anything but a rough diary, found on National Forest lookouts. His place has been taken by a bet-

ter educated class of officer, versed in topography and surveying, who can handle complicated instruments and set down concise observations on meteorological conditions, areas of visibility, and other important data that all lookouts are now required to keep. Young women have also entered this field of outdoor work, and are now to be found handling lookout jobs in an efficient manner in the National Forests of Colorado, Minnesota, Oregon and California.

Within the past few years the airplane has vied with the lookout as an effective means of detecting incipient forest fires. 1921 marked the third season during which an elaborate aerial patrol was maintained by the Forest Service in cooperation with the U. S. Air Service throughout the forest regions of the Pacific Coast States. The airplane, although an important ad-

junct to the detection and fire fighting systems now in use, will probably never replace the lookout station. One of the reasons for this is that any given part of a forest located along an aerial patrol route is only under obser-



THE CLOUD PATROL

A careful watch is kept during the fire season by regular air patrol. This one goes out from Mt. Elwell, on the Plumas National Forest in California.



THE AIRPLANE FOREST PATROL

This patrol is maintained by the Forest Service in cooperation with the Air Service of the United States Army in the Pacific Coast States. The airplane is an important adjunct to the ground system of fire lookouts maintained on the National Forests.



THE HIGH TYPE OF STANDARD FIRE LOOKOUT

This is the sort of tower used in the level forested regions of the Eastern and Lake States. An 80-foot tower with screened-in observation platform on top, reached by an iron ladder. Pennsylvania has 68 towers of this type and 80% of her fires detected last year were located by the use of these towers.



THE LATEST MODEL STANDARD FIRE LOOKOUT

This is the one now in use in the West—a glassed-in crow's nest, guyed to the rocks with wires, connected with the outside world by telephone, and equipped with the latest scientific instruments for weather observations and smoke detection. Harney Peak Lookout—in the wonderful Black Hills of South Dakota.





A TYPE OF STANDARD FIRE LOOKOUT

This is another one of the Forest Service fire lookouts, and a type which is rapidly coming into favor and use. It is a steel tower, 40 feet high, with glassed-in observatory reached by iron stairs, located in Arizona.

vation from an airplane for a few minutes each day, on account of the short duration of flights, the speed of the ships, and the great distances covered. The lookout observer, on the other hand, maintains a constant watch from daylight to dark, and though his field of vision is limited by distance and weather conditions the territory over which he stands guard is under observation for the maximum period each day, and he is thus able to discover many fires which the airplanes miss.

The forest fire lookout is here to stay. It has been thoroughly tried out and proven a success. The very fact that one eastern State, Pennsylvania, with its new and elaborate system of fire control, erected 68 lookout towers during the past year itself speaks for the permanence and effectiveness of these eyes of the forest.

### The Tragedy Of Carelessness By Orville Leonard

**T**HE air is breathless in the woods. The dried leaves—brown and red and yellow—rustle under foot.

The nobly rounded breasts of distant hills, the brush-clad nearer slopes, the shadowy forest depths between the big tree boles, are veiled in warm blue mist. . . .

Suddenly another mist comes stealing through the trees. It is not soft blue mist, but sinister gray smoke. Then billowing black clouds, hot and choking and shot with flame, follow swiftly after that stealthily spreading

veil of gray. The little flames creep steadily through the carpet of dead leaves, the brush-clad hills are a giant's bonfire, the boles of the noble forest trees are torches of living flame.

The partridge scuttles beneath the brush; the rabbit darts to cover ahead of the roaring menace. With the thick smoke billowing ahead and covering the woods, a steady wall of flame roars on, licking up in its rapid run, every twig and bush and tree—every living blade of green.

Then the partridge and the rabbit are outrun and swallowed in the fire—nay, more, their very species are nearer extinction, for all the young of every living thing have been seared to a crisp by that fierce fiery breath.

And when the fire demon has swept his course, he leaves a blackened swath of stark, dead desolation that cannot grow into the fair green forest that it was within the life span of this generation. For years to come, the twisted arms of fire killed forest trees will writhe in dead, black protest to the sky.

For tragedy may be the result of thoughtlessness, even through such a tiny instrument as a carelessly flung match, or a campfire abandoned while still burning.

## Our Fire Problem--1922

A Campaign is At Hand

The Enemy is Fire

His Opponent is You.

The Dispute is over Forest Resources.

The Final Outcome is Unquestioned. But

What Shall the Losses be

In Timber, Range, Scenic Beauty, Buildings, Human Life?

The Answer Is

The Losses will be Small If

You and Other Veterans of Former Battles

And Go-Get-'Em Recruits

Are Aggressively and Everlastingly on the Job.

With Head and Hand and Weapons,

Planning, Preparing and Anticipating

Where and When the Enemy will Strike

And How You Can be Right There

To Gas Him in the Zero Hour

Before He has Time to Dig in

And Throw Up a Smoke Screen.

Slackers, Slumberers, Blunderers and Shade Hounds

Will March Over

To the Forever Inactive List

Which has no Pay Roll Attached.

High Voltage, High Pressure

High Power and High Speed

Broadcasted by Contact and by Radio

During the Campaign of 1922

Will Keep the Enemy

Where He Belongs

In the Final Review

The Forest Service will Stand Supreme

For Duty Well Done.

(District Forester, D-6, Circular Letter.)

## FOREST RECREATION DEPARTMENT

Arthur H. Carhart, Editor

### The Fool and the Demon

**W**HY do they do it?" almost wailed Corey. I admitted I did not know.

Corey is not the name of one of the best landscape architects in the west, but it will suffice to designate the man who left his work last year and paid the San Isabel Forest the compliment of directing some of the recreational work there. He is one of my best friends, an artist of the highest ability and a newly developed lover of the great landscapes of the Rockies.

Night as black as that darkness found in an unlighted cavern had settled down on the camp as we talked. In the next tent some of our crew who were building the Cascade Trail played cards. In the far distance the lights of Pueblo twinkled, and from up the canon came the treble roar of the small falls of Squirrel Creek. Talk had swung idly from one subject to another. A mutual friend's views on parallelism in musical and landscape compositions, the economic situation, law in city plan, and color blending were a few subjects that set our tongues going.

Then fire and forest landscape became the theme of the discourse. It developed that the landscape architect in charge of great natural landscapes is if anything more an enemy of the fire demon

than anyone in the whole fabric of Forest organization. For, he it is who fits land surfaces for human use and by thus bringing the human family to the forests, produces greater beauty return to the Nation, a greater appreciation of nature and greater health in mind, body and spirit. And the greatest destroyer of natural beauty values in the Forest is fire. In order to preserve this beauty to give to the people the landscape man must join hands with all against this common enemy.

The majority, the greater majority, of campers are good forest residents. They know the rules of the game and they play them. They leave a clean camp. They are clean in their whole makeup, physical and mental. And they are careful with fire. This attitude comes from being in close contact with the outdoors for several seasons and in that way becoming so respectful of natural beauty and loving it so intensely they treat it properly.

The great family of trans-state tourists who bring their camping outfit with them are almost wholly educated to be careful with fire. They know what it is to leave the Fire Demon loose in the timber of the hills. They have either seen the flames licking up the timber and with it the beauty of the hill-



THE FIRE DEMON'S BANNER

It was in such a country as this that the Woodrock Fire raged. Much of the gruelling heart-breaking work of stopping these fires will be eliminated when more people are careful with fire.

know what it is to leave the Fire Demon loose in the timber of the hills. They have either seen the flames licking up the timber and with it the beauty of the hill-

Fire in forest lands does much damage that is directly computed in board feet of lumber and then reduced at once to a cash basis founded on current lumber prices. Or it can be shown that so much watershed protection is destroyed by fire each year.

But there is a great value which cannot so readily be put in figures which is just as surely destroyed by a forest fire. And that value is the beauty which is present in any tree-clothed section of the country.

The recreationist is justly blamed for many fires being unleashed in forests. Perhaps too much blame is heaped on his head. It is none the less true that in the aggregate he does no insignificant amount of damage to the very qualities which call him into the forests each year.

It is possible to almost wholly eliminate all man-caused fires if sufficient care is exercised. To bring home the seriousness of the offence of leaving a fire unquenched or a cigar butt still alive these stories are offered. They represent three views and are based on facts. Mr. Ancona has presented the outlook of the field administrative man. Mr. McLaren outlines a vivid story of one fire he helped kill while on the job of fire suppression in one of the western districts of the Forest Service. The third represents a landscape architect's thoughts relative to the destroying of beauty by fire. If they make you use care with fire they have done their duty.—Arthur H. Carhart, Editor, Recreation Department.

side, they have from afar witnessed the smoke columns towering over an orgy of the Demon, or they have traveled sufficiently to see in old fire scars that, once turned loose, fire will ruin, not alone economic values, but scenic values as well.

It is another fellow that does the damage. And so I told Corey that night we talked. It is the man insensible to beauty who lives with it all the time and never reacts to its stimulus that cannot see more in a green timbered hillside than in a row of charred stubs. He is of two types. The first of which is the man who has no sense of the beautiful whatever and the second is the man who has so often beheld beauty that he is surfeited with it all. Either are to be pitied, but pity will not excuse their many crimes against beauty through not being careful with fire.

Then there is another recreation man who is much more innocently dangerous than the man who does not care for beauty. He is the fellow who loves all outdoors—for he is out in it for the first time. But he does not yet know how to handle himself in the hills and has not yet come to know the work of the Demon. He is "the man who doesn't know it is loaded." He is always warned before he gets on the camp areas but he goes serenely along with the idea somewhere in his mind that while it happened to others it will never happen to him, for he is a "regular whizz" as an outdoor man. He will sooner or later learn not to fool with fire but it may cost much in labor, materials, supplies and last, but not least, beauty. He is a menace equal to the man who never will care.

Can you conceive of the fierceness of the loathing which the painter of a beautiful canvas might entertain against a thoughtless amateur dabbler who considered himself a judge of art and who in pointing out some point of technique smeared the fresh paint which after many days of work had just taken final form under the master hand? If you can you may have some idea of the real personal feeling the landscape man might entertain against the thoughtless lout who ruins a whole natural beauty composition with a cigarette stub not extinguished before he throws it away. The whole loss from all standpoints affects the artist makeup of the landscape architect, but he reacts more than anyone else to the loss in beauty.

The entire loss in beauty may be sensed by many, the different factors may be reckoned by a few, but the

landscape man sees the whole loss from the human use side of the problem. The landscape is no longer habitable and it no longer can serve human beings and for that reason he most swiftly condemns the man who comes to the forest and through the grossest carelessness turns loose the fire fiend.

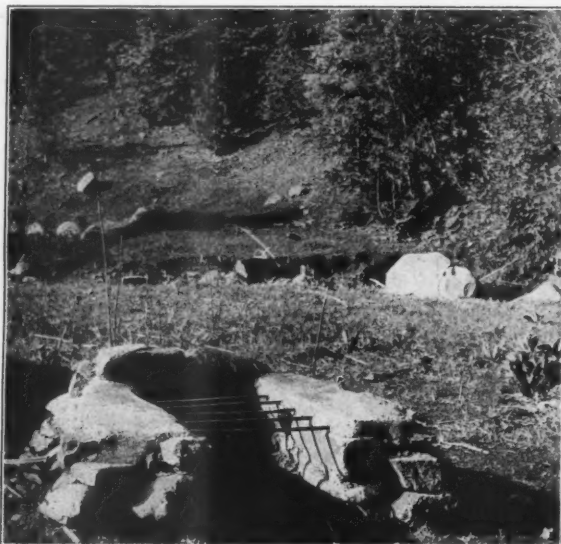
Beauty is one thing of great value which cannot be dissipated through proper use. The pleasurable reactions experienced from an outlook when viewed by one person detracts from that scenic panorama not a whit more than when the same is looked upon by thousands. The laughing gurgle of the stream may be heard by five or fifty and still have the same cheery or mysterious quality about it. In fact the one big commodity which can be used time after time without taking anything off of or out of the ground is scenery. Scenic qualities have

been said to be the only things which one could sell time after time and still keep.

But misuse will soon dissipate scenic beauty and its values. Poorly constructed developments, ill-advised planning, grotesque and deformed structures all soon dispel beauty in a scene and supplant it with unsightliness. But greatest of all destroyers is fire. For while one person can make one little park a thing which is no more beautiful by putting up a cast iron or other inappropriate structure, it spoils only that one small section. In contrast, one foolish, thoughtless, careless individual by not putting out the little glow left in a match when he throws it away turns loose a mighty evil

power which at almost one breath sweeps everything of beauty out of existence in hundreds, often thousands, of acres of ground.

And so we talked of this that night. Of the coming of the people to the forests, of the many, many good campers and woodsmen, of the great values which the whole population receives from coming into forest lands, but most of all we talked of the risk some take in utterly ruining through carelessness the very thing which attracts them to the spot. The fallacy of the thing is appalling. It is like killing this beauty because it is so dearly loved. Almost in wondering amazement that people would do such a thing as risk that beauty, the question came, "Why do they do it?" And as I answered my very dear friend that night, I must say I cannot for the life of me see why the recreation seeker will ever take the slightest chance of placing his own playground in jeopardy of the holocaust.



FOREST SERVICE CAMP FIREPLACE

A few dollars invested in one of these simple structures may save thousands of dollars worth of lumber and great beauty values. They are always located so no fire can get away from them if at all properly handled and thus help protect the Forests.



# Answering the Call

By John McLaren

THE day had been a hard one at the District Office. Fire season was on. Every ring of the phone bell threatened to send some man into the field to take charge of a big fire. But no call had come to me and my family and I were happy in the thought.

"Well, John," said the wife, "glad you are home for supper tonight. I've been afraid all day you would telephone that you must start for a fire somewhere. I wish it would rain so that the fire danger would be reduced. I've packed your field clothes so that everything would be in readiness if you did have to leave in a hurry."

The evening meal finished, we were having a delightful romp with the kiddies, when "Ting-a-ling. Ting-a-ling" came the summons.

"Hello," came the call over the wire. "This is Western Union. Telegram for the District Forester signed by the Supervisor of the Bighorn Forest 'Fire near Woodrock forest cover very dry, strong southwest wind one hundred men on way to fire Ranger Austin on the job. Estimated cost not less than \$1000.'"

A glance at the clock showed 6:55. Just twenty minutes to make the train. Thanks to the wife's thoughtfulness it could be done. With a hurried goodbye I was on the road again to another conflagration, pondering the while the possibilities of an unusually hard fire suppression job. That section of the Bighorn is heavily timbered and several old "slashings" are in the vicinity.

After a night's ride the Supervisor's headquarters at Sheridan were reached. The Clerk, with a welcoming smile and a hearty handshake, explained that the "big" fire had spread rapidly and that, for greater troubles there were several other fires reported.

Every Ranger on the Forest was handling a fire job and the Supervisor and Deputy had left for the field yesterday. More men, more supplies and more equipment were needed. The Clerk was as busy as a man on the firing line receiving and filling orders, giving infor-

mation to the reporters and routing autos and trucks.

The situation looked extremely serious. More trouble might develop. All the fire fighting equipment on this Forest was in service. As a precautionary measure, the District Office was wired to ship by express tools (from the central cache) sufficient to equip one hundred men and to detail five Rangers from other Forests to this point for fire duty.

A fast twenty mile ride by auto and Dayton was reached, at which point men were being mobilized and forwarded to the fires.

Fisher, the wide-a-woke, energetic Secretary of the Sheridan Commercial Club, was in full charge of recruiting. His efforts were tireless and his competence so evident that it was unnecessary to detail a Forest Officer at this point.

Another twenty miles travel and the main fire camp was reached.

The Supervisor, saying simply, "I'm glad to see you," briefly outlined the situation. The other fires were all manned and were being held and 200 men would be in the big fire by night fall. Asked for the cause of the big fire he stated that conclusive evidence had been obtained



PINES IN THE SAN ISABEL

Not only will many board feet of lumber be destroyed if fires burn up these trees but a beauty value of even greater magnitude will be lost.

and that the man responsible for it was at work with the fire fighters and could be interviewed at any time.

An inspection of the fire developed that it had reached the old slashings and, driven by the wind, was an appalling, raging inferno which apparently no human agency could hope to conquer.

Two hundred men on the job, ten days of grueling, exhaustive labor and the fire was under control. Twenty-seven hundred acres of green valleys and mountainsides were made black and desolate and the cost of keeping it from other and more valuable timber was over \$6000.

Needless and wholly unnecessary because it came as a result of one man's egotism and carelessness. This man had been clearing land on some patented mining claims, not because it was essential but to provide some-

thing to occupy his time while he remained as a watchman for the property. During the summer the observer from the Lookout had called on this man and the District Ranger had twice visited him and each time he was asked to desist from burning brush because of the severe drought. In each instance he indignantly protested against being "pestered", pointing out that he was a pioneer, had hand'ed fire all his life and knew more about fires and their habits than all the Rangers on the Forest combined.

On a certain Friday he burned three small brush piles, said he looked at them on Saturday morning, concluding the fire was all out, and, as a matter of precaution, he looked at them again Sunday and there was no evidence of fire. Then he went berry picking.

The wind came up, the blackened embers were fanned into flames and the evidence on the ground pictured perfectly what had happened. Burned strips led from each old fire until they joined. Spreading in width as the fire advanced it had considerable front when the slashings were reached.

This man said he knew the responsibility was his, that he was mighty sorry and he was sincerely contrite. He stated that he had learned his lesson and that if he were allowed to go without prosecution he "would never do it again."



PACK TRAIN LOAD OF FIREFIGHTING EQUIPMENT

No small part of the hard work of fighting a fire when it gets started is to supply the crews with food and equipment. All this costs money and effort which might go into constructive work—if fires can be eliminated.

His attitude and sincerity were not questioned, but it was pointed out there were other pioneers who were just as competent and just as cock-sure as he and that individual lessons at \$6,000.00 cash could not be tolerated. He therefore had occasion to tell the court all about it and the passing of sentence had a salutary effect that probably could have been attained in no other way.

The day has almost passed when fires are maliciously set, but we still have the criminally careless, the class "who didn't know it was loaded," and this includes many campers who, by lack of absolutely extinguishing camp fires, jeopardize the beauty of the very region they have come to enjoy.

It will be many moons before the fire alarm will remain silent through the season but care and concerted effort on the part of those who come to the forested areas will materially reduce the necessity for sounding it often.

The time is not yet when I may cease to hustle for a train which will take me to the scene of a large fire, and the men in the field must continue to devote their time and energy to suppressing fires when they are so urgently needed on construction work.

Meanwhile all Forest men "preach and practice care with fire," and when that fails the hand of the law falls heavily on those who unloose the fire menace.

## The Ranger Tells the Judge a Few

By Edward P. Ancona

"BILL HAWKINS!" I cried. "Greetings to you, old man! You sure look good to me against that yellow pine background. And the Canyon Station the same as ever! Never mind, Bill, some fine day I'm going to slip down and plant a few tin cans in that foreground and ruin you forever with the Super."

"Very well, Judge, the same to you. Back to the same old spot on the Middle Fork? The big one is still waiting for you up in that pool below the log jam. However," a twinkle crept into Bill's gray eyes, "this is the fifth year, you know, and he will soon know you by that careless way you have of dropping a gray hackle into a pool."

This was plain slander. Ranger Bill knew that I could fish with the best and except when matched against his own peerless skill, I was rarely bested. However, I usually came out a close second on those rare days in the season that he dropped into camp and challenged me to a match round of an hour in the pools and white water of

the Middle Fork. I let the matter drop and changed the subject. We were on our way up from the distant city in the desert to the joyous retreat of pine and mountain and water in the Pinto National Forest, in the high mountains far above swelter and heat. Year after year our party returned for refreshment and recreation, dragging our camp outfit in the trailer back of our sturdy gas wagon; and not the least of the pleasure of the return was the greeting we received from the genial Bill Hawkins, Forest Ranger, who ruled over this particular section with a firm but judicious hand.

"How are the fires this year, Bill?"

A shadow passed over Bill's bronzed face.

"Judge, I tell you I'm worried. I've never seen so many strangers up here in the Cristos as this year. It seems as if the last inhabitant of this State has acquired an auto and that about half of them are bent on camping up here. It's dry—deadly dry—and while I warn most



REPLANTING

Years ago a fire stripped the hills shown in this picture. Three decades have passed and no forest cover has returned. This crew is planting seedling trees in an effort to bring back greenery to the hills where once great fir and pine trees towered.

of them, some get by. I keep two guards riding the West Fork and the Canyon Largo and spend the daylight hours on the Middle Fork myself and so far we've kept her in hand. But, Judge, would you believe it, I must relocate the camp fires of half of those I have warned but the day before. Then every day the three of us turn in from six to a dozen small fires, in the daily fire report to the Supervisor, that we put out along the roads—cigarette butts, pipe ashes, the cigar stub of some opulent citizen, a blazing match—all from passing cars and only one chance in a hundred of catching the party that did it."

"Any arrests, Bill?"

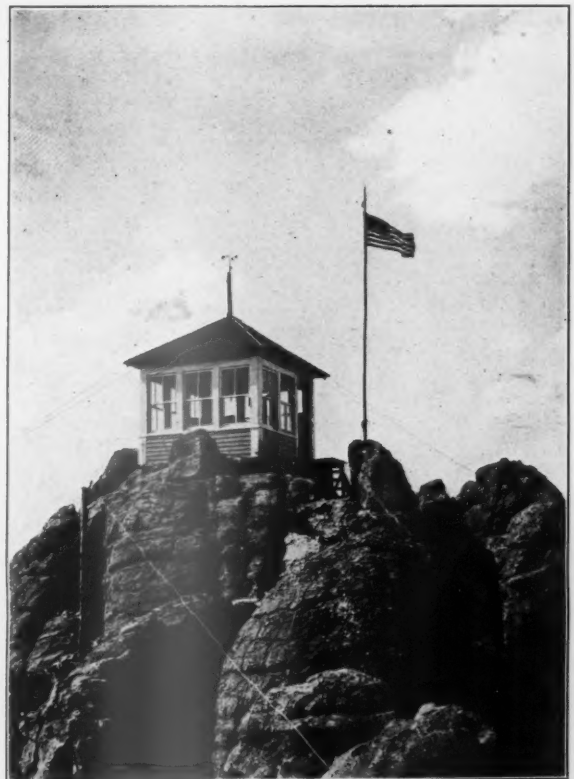
"Yes, I'm sorry to say I had to take one individual over to Pineville and have the Justice of the Peace read him the fire law and charge him \$50 for the reading. He departed a wiser citizen. And three parties have been escorted out of the hills for needing a second warning from me regarding leaving their camp fires unattended—and a windy day at that. I do hate to break up a happy family party like that, and the last one, Judge, had in it a little chap who cried because their week up here was cut to two days. I offered to take him over to the Station to spend a week with my little ranger and do you know the lady in the party—well, the lady she wasn't exactly nice in her display of temper over the whole affair. That's

one of the hard things one runs up against in this game of trying to save the big timber for the very people who would thoughtlessly destroy it and who would lose most through its destruction."

"Have the other campers heard of these sudden departures? Oh, yes, and there is much improvement as a result of the discussion. I'm hoping you will spread the good news up the Middle Fork. There goes my telephone, excuse me a minute, Judge."

A moment later he returned.

"Casualties—one brand-new six cylinder auto, a three hundred dollar camping outfit and a happy party turned to despair. Two hundred miles from home. Well, so long, Judge. Guess I'll toddle over the divide and look into it. Jim said he had it under control and that the two men in the party had been on the handles of Forest Service shovels for over two hours and were sore both ways. Guess they've fined themselves about to the limit of the law and I aim to attach the remains of the car. Got a sign for it all figured out and I think most of our troubles with the campers will be over with for some time. Object lesson is a great thing. Hope you hook the big one, Judge. Adios."



LOOKOUT HOUSE

One of the important fire prevention units is the lookout. With millions of acres of forest spread out below the first feather of smoke in any part can be sighted and fighters dispatched to the scene of the fire.



# EDITORIAL

## FORWARD STEPS IN FEDERAL FORESTRY LEGISLATION

**L**OOKING back upon the efforts of the past two years to secure federal forestry legislation, advocates of the cause can well give thoughtful consideration to the extent to which differences of opinion among themselves on certain points have served to delay the movement as a whole. Unquestionably, the four most important planks in any forestry program for this country are (1) the regulation of the cutting of privately owned timber, (2) the control of forest fires, (3) the expansion of research, both in forest production and in forest utilization, and (4) the extension of state and federal forest holdings.

There is substantial unanimity of opinion on all these planks except the first. But there is a very clear-cut divergence of views as to whether the state or the federal government should have authority to control or prescribe the methods of cutting private stumpage. It is around that point that the fight among the advocates of a national forest policy has centered—and it is right there that the supporters of different views can give common thought to the extent to which their disagreement on that one plank threatens to postpone indefinitely legislation embodying the other planks.

The forest situation in the United States is urgent at too many points to justify a policy of doing nothing until all can agree on every principle involved. There is no sense in delaying action on fire protection because there is division as to methods of cutting, or in restrict-

ing research because opinions differ on some other policy. The critical period in our forest history will be the period between the exhaustion of our old growth, virgin timber and the harvest of our man-grown timber. That period is close upon us and the most immediate protection against it is fire protection and the development, through research, of more complete utilization of our present annual cut. Every year's delay in conserving our present timber reserve brings the day of shortage that much closer.

Going forward with principles with which we are all in harmony involves the surrender of no convictions. Is it not, as a matter of fact, the clearest evidence of wisdom and the highest expression of service to achieve those urgent principles which seem nearest achievement by virtue of common support and to leave disputed principles to separate or subsequent consideration, or if need be, to the development of a more fully informed public opinion? Legislation embodying any one of the four planks or principles mentioned is susceptible of being handled separately and largely on its own merits; or all those principles upon which there is unanimity of support, could be grouped in one bill and presented to Congress as the common advocacy of all. Congress would then have no excuse to delay action on fire protection, enlarged research and extension of federal forests pending settlement of the question of control of cutting on private timberlands.

## FOREST DEPLETION IN GEORGIA

**T**HE Georgia Forestry Association has come into being at an opportune time. It has a large and urgent field of endeavor before it. In no state in the South proper does forest depletion appear to be proceeding at a more rapid rate than in Georgia. Two of its most important industries are at stake, lumbering and naval stores. These are industries which for years have played an important part in the economic life of the state. Until recent years, they furnished employment to more wage earners than any other manufacturing industry in Georgia.

It is unfortunate for the prosperity and development of the state that the waning of these two ranking industries is taking place at a time when the state's leading industry, the manufacture of cotton goods, is threatened by the ravages of the boll weevil. The decline of these three industries simultaneously unless guarded against by prompt remedial action, will be a set back to the state which will take years to overcome. Already unhealthy conditions are in evidence and while the forests are rapidly being exhausted, they are nevertheless rescuing cotton growers from bankruptcy in some sections

of the state. The farmer, dependent upon his cotton crop and finding it devastated by the boll weevil, is turning to his woodlot as his main means of support.

The situation is one of impending economic menace to the state, because its forest resources are being so rapidly spent. They cannot longer be depended upon to exert a stabilizing influence industrially during periods of stress in other industries of the state. As a matter of fact, conditions are quite the reverse. The forest industries of Georgia are dwindling and not growing industries. From industries of first importance they are slipping back year by year as any industry whose supply of raw material is vanishing, must do.

During a period of less than a decade and a half, the production of lumber in Georgia has declined practically 50 per cent, a loss to the state of over \$13,000,000 annually in the sale of lumber alone. During the same period, the state has lost 1300 sawmills, or 65 per cent of the number operating in 1909. It is impossible to arrive at the aggregate investment represented by these mills, but it must run well into eight figures. In addition, there is the loss of labor, taxes and markets. In the

naval stores industry the shrinkage has been still more marked, that industry having declined in productive vigor 75 per cent in the last twenty years.

Forest depletion, of course, is at the bottom of this situation. There are twenty million acres of forest land in the state, all of which has been cut over with the exception of about one million acres. The extent to which these conditions have affected the wage earners of the state is indicated by the fact that in 1900 the primary forest industries of the state supplied employment to 38,827 wage earners and in 1920 to only 23,141, a decrease of 40 per cent. In both 1900 and 1910, the forest industries of Georgia supplied employment to more persons than all other industries combined, excluding the manufacture of cotton goods.

Much more might be said about the inroads of forest depletion upon the economic progress of this great southern state. It is much more serious than the people of the state appreciate. If its nineteen million acres of cut-over land were being developed agriculturally the future would hold out greater promise, but the area of land in farms has actually declined in the past ten years. The greatest enemy of the future of these cut-over lands is the widespread public apathy and ignorance in respect to the evil progress of forest depletion within the state.

But there are signs of a public awakening. The Governor of the state is fully alive to the seriousness of the situation, as is Dr. Soule, president of the State Agri-

cultural College, and a number of other prominent men. They are whole-heartedly supporting the forestry movement in Georgia and with their help the Georgia Forestry Association will do well to center its efforts on breaking down the wall of public apathy which permits forest fires and other forms of forest depletion to proceed unrestricted and uncontrolled. Opportunities for state development and progress by enlightened utilization of forest land are unexcelled in Georgia. Its wood producing power is tremendous if only put to use instead of being abandoned as an old mine.

Speaking before the forestry meeting at Macon in June, Mr. Austin Cary said:

"My own belief is, and that has thirty years experience behind it, during which I have worked in every timber region of the United States and seen the forests in several European countries, that no region in the world probably has greater natural facilities for producing timber values than the district centering on the Oketinoke swamp . . . Longleaf and particularly slash pine characterize this region, the latter in my opinion a species which will be recognized in the future for the combination of utility in its products, for its readiness of reproduction and rapidity of growth, as one of the most valuable trees on the earth's surface."

If the Georgia Forestry Association can inspire in the citizens of the state some such appreciation and confidence of the value of their forest soils and their native species, it will have more than half solved the task before it.

## THE RETIREMENT OF ALFRED GASKILL

ON July 1st Alfred Gaskill was compelled to give up his position as State Forester of New Jersey on account of poor health, after serving in that office for more than 15 years. His retirement from the forestry work in New Jersey marks the end of a career of public service which has been rich in value not only to the State but in larger national fields. His quick perception, clear foresight and fearless championship of his convictions have justly entitled him to the leading place he has often been called on to take in forestry.

Unlike most of the American professional foresters, Mr. Gaskill entered the profession not as a fledgling fresh from school, but with a previous considerable experience in business as a background. In August, 1898, he retired from the glass manufacturing business in Southern New Jersey and took up the study of forestry with Dr. Schenck at his Biltmore School. After completing this study in June, 1899, he was detailed by the United States Forest Service to special studies and propaganda on the Pacific Coast. Returning in November he spent the winter at Harvard University in special scientific study. In May, 1900, he left for Europe, where he remained, studying continental forestry and forest conditions and pursuing special courses at the University of Munich, until the fall of 1901.

In January, 1902, he again entered the federal forest service and did a great variety of work, including forest fire, silvicultural, editorial and propaganda assignments. He returned to New Jersey in February, 1907, in the infancy of the forestry movement in the State. From then until his retirement he has been the guiding genius of forestry in New Jersey, first as State Forester and since 1915 as Director of the Department of Conservation and Development, building up an organization and work which ranks high among State Forestry Departments in achievement and stability.

Mr. Gaskill was a pioneer among American foresters in his insistence that adequate fire control was the basis of all forestry. From his earlier work in the Federal service until the present, he has led in the movement to put fire protection first. Likewise he has steadfastly worked to check the widespread belief that all forestry is summed up in tree planting and to urge clear thinking about the questions of lumber needs, forest taxation, and the relations between the public and forest owners.

His work in New Jersey has typified his complete conviction that forestry must have the support of public opinion to succeed, that without it progress would be at best slow and continually subject to serious setbacks. The uninterrupted and marked progress made in the

State under his leadership is ample testimony to his success in the practice of what he has so continuously preached in this respect.

He served for many years as a director of the American Forestry Association and has been an active member of the Society of American Foresters. He was one of the originators and for a long time actively at the head of the Northeastern Forester's Association and has taken

an active part in the organization and work of the recently organized Association of State Foresters.

The hearty good will of his host of friends and admirers, both within and without the profession which he served, go with him as he lays aside the responsibility of public service. Their hope is that his voice may still be heard around the council table when forestry plans and problems are considered.

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## SUB-COMMITTEE ON FORESTRY

A forward step toward the adoption through legislation of a national forestry policy following the hearings on the Snell bill last January was taken just as the House adjourned in June for six weeks. Chairman G. N. Haugen of the House Committee on Agriculture then announced the appointment of a sub-committee on forestry, consisting of Representatives G. N. Haugen, Iowa; J. C. McLaughlin, Michigan; J. D. Clarke, New York; J. W. Rainey, Illinois, and M. Jones, Texas. This action was taken after conference with Representative Bertrand H. Snell, of New York, the forestry specialist of the House,

members of the Agricultural Committee, representatives of the National Lumber Manufacturers Association, the American Forestry Association, the pulp and paper makers, the newspapers and others industrially interested in the conservative utilization of the forests of the country. It represents an effort to get away from the differences of opinion that have hitherto blocked progress toward the adoption of a public forestry policy, and to attempt to find common ground on which all advocates of such a policy can agree.

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## GEORGIA FORESTRY ASSOCIATION

AS a result of the activities of the Georgia Forestry Committee appointed a year and a half ago by the Southern Forestry Congress, the state of Georgia has recently joined the list of some twenty-eight other states in which forestry associations are working to perpetuate our forests. At a meeting held in Macon, Georgia, on June 6 and 7, a permanent Georgia Forestry Association was organized and began work at once to organize the state in support of a constructive forest policy. The new association hopes that by gathering together the widespread forestry sentiment which exists throughout the state, it will be able to obtain this summer, legislation which will form the first and basic essentials of a strong state forestry department.

In point of accomplishment, the Macon meeting was one of the most important forestry meetings held in the south during the past year. It not only resulted in the formation of a strong forestry association, but it awakened the state to the seriousness of forest depletion as an economic menace to its future prosperity and development. Governor Thomas W. Hardwick has become fully alive to the situation and in a direct and clear-cut address at the Macon meeting, sounded the keynote of the movement to perpetuate the forests and the forest industries of Georgia. He declared that the time has come when the state can no longer shirk its responsibility to protect one of its most vital natural resources from wastage and depletion. He expressed himself strongly in favor of fair and reasonable regulations applicable

to the cutting of timber and to the turpentineing of undersized trees and advocated a state forestry department, supported by special taxation, to be responsible for fire protection and the general promotion of forestry throughout the state.

Among other speakers who strongly supported the movement were Dr. Andrew M. Soule, president of the State College of Agriculture; J. J. Brown, Commissioner of Agriculture of the State of Georgia; Thomas W. Gamble, of Savannah, editor of the *Naval Stores Review*, and Dr. S. W. McCallie, State Geologist. The meeting, which was attended by about one hundred people from different parts of the state, brought out a surprisingly strong sentiment for immediate action, and while there was some division of opinion on the question of taxation, a spirit of earnest cooperation prevailed throughout.

The American Forestry Association cooperated with the Georgia Forestry Committee in organizing the meeting and in calling public attention to the need of forest action in the state. The Association was represented by its forester, who spent six weeks in the state prior to the meeting. The immediate goal of the new association is to obtain forestry legislation at once, the Georgia legislature now being in session. The forest question is due to come up in the legislature as a result of that body's action a year ago in providing for a State Board of Forestry to make a special investigation and report on conditions within the state. The legislature, how-

*(Continued on Page 499)*



# AN INDUSTRIAL COMMUNITY AT FORESTDALE, VERMONT

By Austin F. Hawes

[State Forester of Connecticut and Formerly Field Secretary and Forester, National Association of Wood Turners]

NO one has tramped in any of the forest regions of the United States without stumbling onto deserted lumber camps, mute evidence of an industry which sprang up and flourished for a brief period and as quickly withered away. Such a camp, half gnawed to pieces by hedgehogs, with its evil smell of tar paper, old shoes and other refuse, might be taken as a symbol of prodigal America, which has taken its immense material resources as a matter of course and squandered them without thought of the generations yet to come.

To one who has traveled in Europe and seen the comfortable little industries nestled in the center of a forest region which is managed with a view to the permanent maintenance of the industry, our American methods seem crude and wasteful. Most of our large wood using industries are located hundreds of miles from the source of supply. Grand Rapids, for example, became the center of the furniture industry when the city was surrounded by forests. Today the purchaser of Grand Rapids furniture pays a high freight rate not only on the finished product, but in addition probably \$10.00 to \$20.00 freight per thousand feet of lumber used. Only a small part of the lumber which enters a factory comes out as a part of the finished product; most of it comes out as waste, but the man who buys a chair pays the freight on this waste.

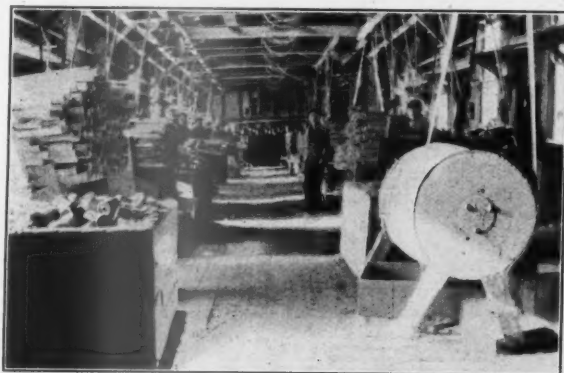
It is an unusual satisfaction to find a locality in one of our own forest regions where the forest has been maintained to supply a particular industry. Such a condition exists in Brandon, Vermont, and is well worth a trip up from Rutland for anyone who is interested. The Newton and Thompson Manufacturing Company has been making wood turnings in the little village of Forestdale since 1846, and has gradually built up a forest property of 8000 acres to support the industry. It is said that in their early days they practically supplied New York City with button molds and other wood turnings, used in the clothing industry. This plant has been much enlarged under the able management of Mr. Louis Bump, who is now president of the National Association of Wood Turners, and is making a wide variety of wood turnings. It would probably be a revelation even to a small boy to know how many toy balloon mouth pieces this company makes in the course of a year. If one goes into a Chinese laundry he will see a counting board with colored beads strung on wires. Similar devices are used in many schools. It probably never occurs to anyone to ask where these are made, but if anyone is interested he will find one of the large sources of supply at Forestdale.

The newest addition to this plant is the toy department which is not wholly a turning proposition. Here white pine logs are converted with great speed into

neat little lock cornered boxes and each box is filled with an attractive set of toys, all on a miniature scale. These include such things as a wash tub and scrubbing board, cups, saucers, and other useful utensils such as



GENERAL VIEW OF THE NEWTON AND THOMPSON PLANT, FORESTDALE, VERMONT, WITH TOY DEPARTMENT ON LEFT AND TURNING PLANT ON RIGHT



INTERIOR VIEW, SHOWING TUMBLER IN FOREGROUND. TURNINGS ARE POLISHED BY TUMBLING AGAINST EACH OTHER



STACKS OF FOUR-FOOT WHITE BIRCH SQUARES LEFT IN THE OPEN SEVERAL MONTHS TO DRY BEFORE TURNING

any well regulated doll's home should have. A child who goes to the five and ten cent store and exchanges a dime for one of these sets might well pause to think of the years that have gone into the growing of the material and the labor which has gone into fashioning the material into its finished form.

While Newton and Thompson Company have not always cut their lumber under the most approved methods, they have followed a general policy of building up a



THE ASSEMBLY ROOM IN WHICH TOY BOXES ARE USUALLY FILLED

timber reserve and have done much forest planting. The annual growth on their 8000 acres may safely be estimated at between three and four thousand cords, and as they are not cutting from their own lands more than 1500 cords annually, it is easy to see that the forest capital is now increasing. If this policy is continued, the company will have what is called a normal forest, which is a very rare thing in this country. In other words the forest will have all ages of trees in the right proportion to yield the greatest possible returns. When this result is achieved the company will be practically self supporting as to timber. An effort is being made to increase the proportion of white birch since that is the best wood for turning purposes.

A few of the lots have now been under scientific forest management for nearly a decade and are producing results very satisfactory to the owners. A five acre lot of white pine may be mentioned as an example. In 1912 the State Forestry Department marked the trees which ought to be removed for the betterment of the remaining stand. 153¾ cords valued at \$3.00 per cord on the stump were cut, thus yielding a net profit of \$92.25 per acre. In the fall of 1921 the crowns of the remaining trees had come together in many places. Furthermore the trees had just dropped an unusually heavy crop of seed, pointing to the advisability of making a reproduction cutting. The writer had the opportunity of marking as Association Forester the lot which he had marked eight years previously as State Forester. About 13,000 feet of pine and 3,000 feet of hardwoods or a total of a little over 3,000 feet per acre besides some cordwood were marked. It is therefore estimated that this area will yield from the two cuttings about \$128.00 per acre. No accurate estimate of the remaining stand was made but the trees are tall and straight, and a rough guess is

\$300.00 per acre. The present cutting should result in a healthy stand of small pines which will eventually take the place of the old trees. The policy pursued by the Company of cutting all logs into two foot lengths before sawing enables them to use crooked logs, even including large limbs.

What has all this to do with a forest community, it may be asked. Simply this: Here is an industry which has existed near its base of supplies for three quarters of a century. It now has 200 employees, and can look forward to continued business for an indefinite period without any serious shortage of raw material. There are no labor difficulties here for there is the old time feeling of interest between employer and employee. Many of the men and women in the plant are of the second and third generation of families who have worked with the same company. Most of them own their homes; many of them have money in the banks or in Liberty Bonds, besides owning cars. A system of profit sharing has been introduced by the management which will benefit the men in the more responsible positions.

One of the best features about this thriving industry is the opportunity it gives for home work. Women and older children can put in their spare time filling the little boxes with toys while they are still in the home atmosphere. This is done by taking to each home a barrel of wash tubs, a barrel of scrubbing boards, etc. and a case of boxes. In a day or so the boxes are collected, each one full of a complete set of doll house equipment.



ANOTHER HIGHLY DEVELOPED COMMERCIAL PRODUCT OF THE VERMONT FORESTS

To one visiting this attractive little community at Forstdale there must come visions of the large industrial centers of the country with their rows of uniform gray houses, smoke covered and dingy. It would not be strange if he departed with the feeling that perhaps our gigantic industrial plants amid their squalid surroundings may not, after all, be the highest product of man's ingenuity. Possibly he will see in this comfortable and satisfied community an answer to the industrial unrest which is abroad, and will understand the difference between the contentment which comes from the development of homes under liveable conditions, and the inevitable growing hatred that is fostered by the contrasts of a great city, such as are afforded by the lights of Broadway and the shades of the East Side.

# FOREST PROTECTION PARADE

By W. G. Weigle

ON account of the increased use of the automobile during the last few years many thousands of people are now going out into the mountains to spend their week ends who used to be content to stroll in the park. This increased travel into the forests has materially increased the number of forest fires. On account of this unfortunate condition the President of the United States issued a proclamation declaring April 16 to 22, inclusive, "Forest Protection Week," and April 22 "Golden Arbor Day." During the week April 16 to 22 every person and organization interested in keeping the forests green was supposed to do everything they possibly could to educate the people along the line of being careful with fire while in the woods.

The United States Forest Service office at Seattle staged a big parade on April 22. The following

organizations came out very strong in helping along with the parade:

Boy Scouts, Camp Fire Girls, Mountaineers, United States Forest Service, College of Forestry, University of Washington, Seattle Chamber of Commerce, Automobile Club of Western Washington, Natural Parks Association, Washington Forest Fire Association, and the Washington State Forester.

The parade was made up of flag bearer mounted, followed by numerous floats, one of which, made up by the United States Forest Service, represented a large mountain with snow capped peaks, timbered slopes, a village in the distance, and a large forest fire represented by an area actually burned over and still smoking. Another, by the Forest Club, carried a fire lookout mounted on a truck with the lookout man taking observations. Another



"SMOKES" REPRESENTED IN THE FOREST PROTECTION PARADE. ALL RIGHT WHEN USED WITH CARE, BUT A MENACE IN THE HANDS OF THE CARELESS.



ANOTHER SECTION OF THE PARADE IN SEATTLE SHOWING THE GIRL SCOUTS CARRYING THEIR ATTRACTIVE AND VERY MUCH TO THE POINT SIGNS



by the same club had a real miniature logging outfit; another the right and wrong way to build camp fires, etc. After these came the Mountaineers with a large pack train of mules, followed by the Fort Worden band; then the Boy Scouts, Camp Fire Girls, College of Forestry, etc. Throughout the parade numerous signs were carried bearing the slogans: "Keep the Forests Green," "Help Prevent Forest Fires," etc. Many suggestions along the line of fire protection of a comic nature were carried out throughout the parade, such as a Mountaineer walking inside of a pasteboard match and cigarette, a large pipe carried on the shoulders of two men; four Boy Scouts on bicycles carrying a stretcher containing the

prostrate body of "Old Man Carelessness" and a band of black, tattered and torn fire fighters returning from a forest fire in a terribly dilapidated condition, accompanied by two Red Cross nurses.

The Boy Scouts came out 1200 strong and the Camp Fire Girls were a close second. Several cash prizes were offered for the best suggestion illustrating fire prevention. The first prize of \$20 was awarded the Forest Club of the College of Forestry, University of Washington; other prizes amounting to \$40, were awarded to the Boy Scouts, Camp Fire Girls and Mountaineers.

A moving picture was taken of the parade and shown in a local theatre during the week following the parade.

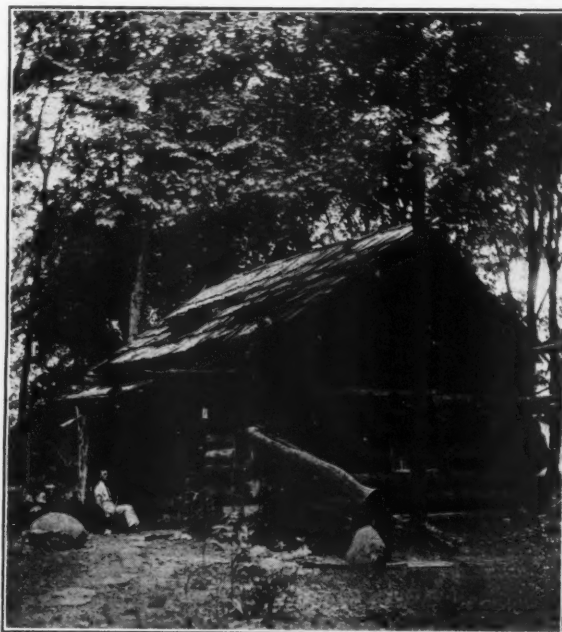
## THE CUTTER PIONEER GROVE

**R.** B. MILLER, State Forester, Urbana, Illinois, finds a growing interest even in the smaller towns for areas which are suitable for parks and breathing places. One very much out of the ordinary was found at Princeville, Illinois, in Peoria County, a small town not far from Peoria. The State Forester learned of this through correspondence with Charles Forrest Cutter, Yale University, class of 1875, now residing at Low Fell, near Newcastle-upon-Tyne, England, and is able through the kindness of Mr. Peter Auten, a banker of Princeville, and a relative of Mr. Cutter, to secure the photograph of Mr. Cutter's pioneer log cabin which is here reproduced just as it stood a few years ago.

This cabin was built by each of Mr. Cutter's friends bringing in a log and was for two years used as a meeting place for the Old Settler's Union of Peoria and vicinity. Everything was made just as primitive as it was in pioneer days, even to the eave troughs made out of round poles, hollowed out enough to carry off the water to a primitive cistern. Here Mr. Cutter brought his books and curios and used to spend hours there in reading and receiving his friends.

His idea in retaining this property for so many years was to show a bit of virgin woods in a state where timber was being rapidly cut off, as well as honoring the memory of his parents. His father was Dr. Charles Cutter and the old Cutter homestead which stood in the northwest corner of the town was one of the first frame buildings in Princeville, lumber for its construction being carted from Chicago.

Mr. Cutter wishes to do something for forestry in the disposal of this small tract but there are many difficulties, as it is too small for forest school purposes or for making into a forest preserve under the Illinois law. It is subject to damage at the hands of prowlers at the present time as there is no regular caretaker who can look after the property. It might go to Princeville as a memorial park if the town would provide funds for its improvement and upkeep, but Mr. Cutter is such an ardent conservationist that he has never allowed any cutting, so that landscaping might not correspond with his ideas. The tract is ideal for a small town park if these difficulties could be properly adjusted.



A FRIEND OF FORESTRY

Mr. Charles F. Cutter (Yale 1875), and his pioneer log cabin at Princeville, Illinois.

Princeville is in Princeville township and until 1837 was called Prince's Grove, there being two other good tracts of timber in Peoria County at that time, White's Grove and French Grove. The general surface of the township is rolling. It had considerable timber originally and is well watered by small streams. Mr. S. S. Slane, a pioneer resident of Princeville, 85 years of age, has a tract of 160 acres on the edge of town along the Sante Fe Railroad track, mostly white and black oak. He states that in 1848 the stand was mostly rock maple, the oak having come in since that time.

Another interesting township in Peoria is Jubilee, which was once heavily timbered through the center, and contains in the southeast corner a tributary of Kickapoo Creek. In this part there was a tract of several hundred acres belonging to Jubilee Episcopal College, founded in 1839, by the Protestant Episcopal Church, and this tract is shown on some of the older maps.

# Novel Trees And Forest Products

By S. J. Record

Professor of Forest Products, Yale University

## THE ROYAL PALM

The cocoanut palm is said to be the one tree able to supply everything man needs for his existence—food, clothing, and shelter—a rather primitive existence, to be



A ROYAL PALM

This fine tree, which is comparatively young, overlooks the harbor of Marvel, in Cuba.

sure. Not far behind is the royal palm or *palma real* as the Spanish speaking people call it. It does not furnish food for man, though it does for his pigs, but it meets so many important needs that the natives hold the tree in the highest esteem and rarely destroy one. To the traveler in Cuba they are one of the most conspicuous and beautiful features of the landscape. The trunks look like tall pillars of cement, usually swollen at the middle, and bearing at the top a giant tuft of plume-like foliage attached to the shaft with a long bright green cap. The trees grow in all kinds of soil from swamps to hill tops, though naturally they make their best development in rich ground. They are wind-firm and stable and stately avenues of them all unprotected have endured the storms for generations without a loss. Woodpeckers drill through the outer layer to build their nests inside but the trees seem none the worse for the damage.

The royal palm is almost indispensable to the natives, and every portion of the tree finds a use. The leaves are especially useful, and cutting them from the top of the lofty trunk calls for skill and daring. The climber

seems to think nothing of it, however, and by means of two loops of rope makes his way quickly to the crown and harvests his crop.

The giant leaves consist of three parts, the basal sheath, the thick flattened stems, and the plume-like blade. The latter supply the roofing material with which the poorer classes in country and small villages thatch their houses and barns. The leaves are also made into fences, and serve as shade over the tobacco fields. Large quantities are used in closing the ends of the bags filled with charcoal, the all-important domestic fuel in the cities.

The leaf stems make good fire wood. The sheath or *yagua*, in the vernacular, is large and flexible like leather, and fills many uses. It is the universal siding for the thatched hut—set on end and held in place by means of horizontal wooden cleats or poles tied to the house posts. The *yagua* is the farmer's wrapping paper and tobacco is bundled in it. It can be folded up like birch bark into receptacles for washing clothes, boiling water and cooking. The inner surface is covered with a thin white layer like parchment which can be peeled off in large flakes and used for writing paper or for rolling cigarettes.

The fruit is a small hard nut borne in clusters. There are three stages from the flower to the ripe fruit on the tree at a time. The clusters of mature fruit are gathered,



Photograph by S. J. Record

A CUBAN FARM HOUSE

This home of a small farmer in Cuba is built entirely from material supplied by the big Royal Palm Tree in the background.

the nuts fed to the hogs, and the finely divided tough stalks tied into bunches for brooms. The native doesn't go to the trouble to pick off the nuts—he hangs the bunches on the pig-sty and lets them fall gradually of their own accord or hastens the process by a daily vigorous shake.

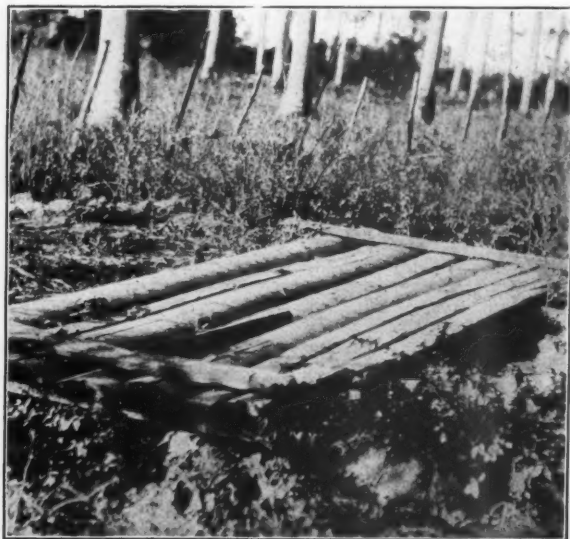


Photograph by S. J. Record

#### ROYAL PALM THATCH

The roof covering of this Cuban shack is made of Royal Palm leaves sided with the leaf sheathes which are held in place with strips of the trunk.

The palm trunks are not like ordinary wood but they produce valuable material for buildings and bridges. The inside of the trunks are loosely fibrous or hollow but there is a thick outer casing that is very hard and strong. It



Photograph by S. J. Record

#### A ROYAL PALM BRIDGE

This small bridge in Cuba is made of the hard outer casing of a trunk of a Royal Palm tree.

is also made into walking sticks and fancy articles and takes a beautiful polish. The hard strands which run

through it, in the familiar manner of a cornstalk, show on the surface like the quills of a porcupine. End sections show these strands as conspicuous dark dots and thin layers are much used for special designs in marquetry.

#### OYSTER WOOD

The writer does not remember ever having seen the name "oyster wood" in print, certainly not in the common reference books, but it is nothing new to some of the dealers and cabinet makers.

The name oyster wood was originally applied to the European laburnum from small logs of which thin end sections were cut and used for veneers in cabinet work. Owing to the difficulty of getting laburnum other woods were substituted. The writer recently examined an old table top which had a central portion of laburnum and the remainder of locust.

The Cuban oyster wood is what is commonly known there as yaiti or aite (*Excoecaria lucida*). The tree is small, rather rare, of poor timber form but has a very fine-textured wood that lends itself readily to carving. The heartwood is a sort of olive brown with peculiar eccentric layers of darker shade that give a very peculiar and pleasing appearance. The sapwood is white and rather thick.

The wood as prepared for use is sawed into layers about one-sixteenth of an inch thick. The best effect is produced by cutting at a slant instead of straight across the end of the log. Very striking effects can be produced by using such material for borders and special designs.

#### KIRI-GAMI OR JAPANESE VENEER PAPER

The Japanese manufacture a decorative material by gluing very thin veneers of wood onto a paper backing. Since the wood commonly used is Paulownia or Kiri, they call this product Kiri-gami (Paulownia paper) though some of it is put on the market under the name of Kiri-kyogi-gami, kyogi meaning veneer.

The thin veneers used are nothing more than shavings made by hand with a big plane, such as carpenters use, only larger. The blade is about six inches wide. A long bamboo spring pole may be used to supply an even pressure, in which about all the workman has to do is to push the plane back and forth over the block and gather up and bundle the shavings.

Paulownia or Kiri is a very rapid-growing tree, sometimes planted in this country for decorative purposes, and has a light, soft and easily worked wood that is much in demand in Japan for a wide range of uses. For the purpose of veneers the trees are cut in winter and the logs stored in cellars where they will not dry out before needed. They are then cut into bolts 2 or 3 feet long, split into quarters, and the bark and defective parts removed. A quarter is then placed in a clamp and shaved along a split side.

After the shavings come off whole they are bundled 50 or 60 together and boiled for about 20 minutes in dilute



caustic soda, after which they are immersed for a few minutes in a dilute bleaching solution and washed in fresh water. Then, in order to neutralize any alkali and prevent discoloration, they are thoroughly wetted with acid water, one part of sulphuric acid to a thousand.

The wet shavings are then spread on a smooth laquered board or glass, and the edges lapped slightly to make up a panel. The water is wiped off, glue put on, and the paper backing applied. The sheets are then hung up to dry and are later smoothed with a hot iron.

Fancy figured paper in colors may be used for the backing, as the designs show through the silvery tissue layer of wood with artistic effect. Its veneer surface may also be printed on readily.

The manufacture of Kiri-gami is confined to Yamagata City in northern Japan. There are 10 establishments with 300 employes. Seven million sheets, each two by three feet in size, were made in 1920. The value of a sheet is from 1 1-4 to 3 cents, depending upon quality. The principal use is in the domestic trade for surfacing decorative boxes and fancy containers; very little is exported. If it could be had in strips of sufficient length it might be used to good effect for wall paper and interior decoration in this country.

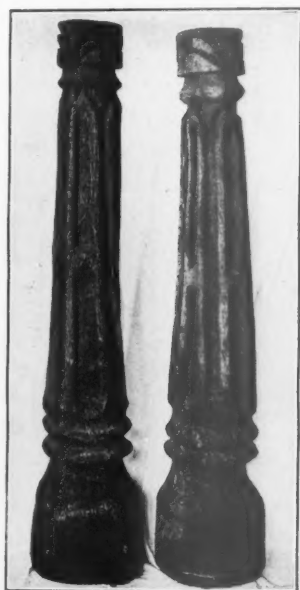
### TREE FERN COLUMNS

Shown in the accompanying cut are two columns, each of which was manufactured from the trunk of a tree fern from 10 to 16 feet high and about 10 years old. They came from the heights of Fort de France, from the place

called "Balata," near the Pitons du Carbet, Martinique, French West Indies. They show ash-colored marks from volcanic cinders which have penetrated under the action of the rain into the fibrous tissue of the tree. The columns have also been pierced with vines, the exposed light-colored wood of which shows in contrast with the dark brown of the fern.

The tree fern grows in great quantities in the forests of the island of Martinique, especially in damp places and at a considerable altitude, where it attains a height of

40 to 50 feet and sometimes more. The trunks of these trees, when old and fully seasoned are cut square and used as posts for arbors, or as piles, or as beams for



Photograph by S. J. Record

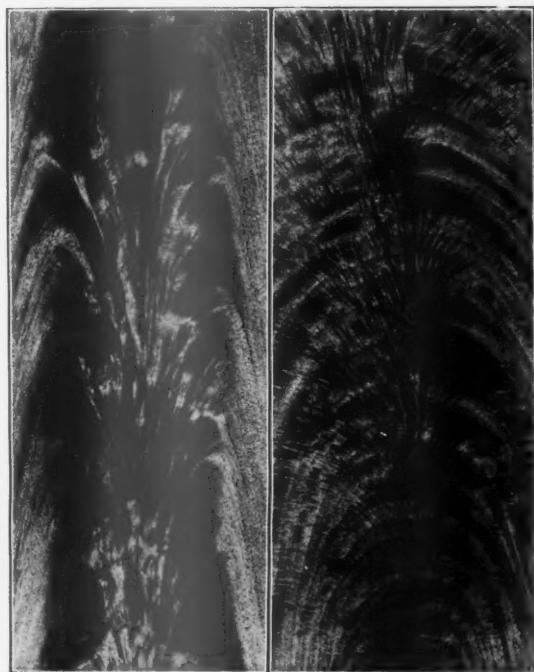
TREE FERN COLUMNS FROM MARTINIQUE

houses in the country. When fully matured it is a very durable wood and is considered incorruptible when exposed to humidity.

Some artisans fashion from the roots flower pots and various novelties which are more or less artistic, and have, as a rule, an original style of their own.

### CROTCH MAHOGANY

Some of the most beautifully figured mahogany comes from crotches of big branches. Such material is in much demand for use in the form of veneers for panels in doors, furniture and cabinets and for picture molding. Very often the veneers are matched end to end to make long panels for bedsteads, pianos and tall doors.



Photograph by S. J. Record

### FANCY FIGURE

Long, narrow crotch producing plume mottle or feather curls. A wide crotch without much distortion of the wood.

The figure of the wood is largely influenced by the width and shape of the crotch, whether U-shaped or V-shaped. The effect in either case is to distort the growth but the closer the branches are together the more the woody layers are kinked and folded. Examination of such wood under a microscope shows that the fibers are buckled and folded from the enormous pressure exerted upon them. This pressure is the result of crowding—too many cells trying to reach their normal development in cramped quarters.

Material of this kind is useless for most of the purposes to which wood is put for in positions of strength there is a premium on straightness of grain. A serious defect under one standard becomes a high merit under

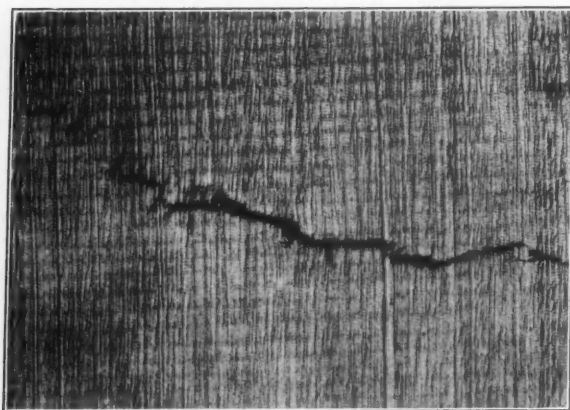
another. Beauty and utility are often wide apart in their demands.

Along with the distortion of the structure in the wood of a crotch there is usually a very pronounced deepening of the color due to excess deposits of pigments and infiltrates. This shows in marked contrast to the adjacent wood and adds greatly to the decorative quality. A long narrow crotch may give the effect of a fountain or tufts of beautiful plumes.

Often the wood of crotches is defective and where the branches grow too closely together there is danger of the bark being caught and covered by later growth. This is what dealers in logs call "in-barking", a general term applying to all cases where bark is caught in the wood, as in healed-over wounds and fluted trunks.

### HEART BREAK IN WOODS

It is not at all unusual to find in certain woods that cross-breaks have occurred in the heart of the logs. This defect is very common in African mahogany and during the war the writer saw hundreds of boards, otherwise perfect, culled because of these breaks. They vary in length or depth from a few inches to a foot or more, and there may be several of them close together. They are variously referred to as heart breaks, cross breaks and compression failures.



A CROSS, OR HEARTBREAK

Heartbreak or compression failure in a piece of mahogany.

The cause of this damage has never been positively determined. Some believe that it occurs in the standing tree as the result of heavy wind storms. Others are of the opinion that the breakage results when the tree crashes to the ground when felled for lumber. The latter cite the fact that the breaks are usually fresh looking and show no pronounced discoloration or deposits such as one would expect to find in old injuries, particularly in a wood that contains as much gum as mahogany does.

Whatever the cause the defect is very serious and may be overlooked until the later stages of manufacture. The writer has a section of an airplane wing beam of Sitka

spruce which shows two of these breaks. In the case of mahogany a break which is scarcely noticeable in the lumber before it is finished will show up badly when filler and stain are applied.

These breaks are the sign of rather soft and brash wood and it seems the trees in which they are found are always large. Some of the old Sitka spruces which produced clear light-weight lumber were found to be unfitted for airplane construction because their wood was lacking in the essential toughness and resilience.

### ASH-SPLINT PACK BASKETS

The most serviceable pack baskets used in the North Woods are made by the woodsmen during their spare time. They weave them from splints from a slow-growing ash tree.

The basket-maker selects a straight clear-boled brown ash tree growing in the forest, fells it and peels off the bark. Any season of the year will do, but the bark peels easiest in late spring or early summer.

The wood of the ash-tree is made up of alternating layers of soft porous material of the spring growth and tough fibrous material of the summer growth. By hammering hard all over the peeled log the layers can be separated. So the woodsman proceeds to pound the trunk with the back of his ax until the growth layers loosen up. A single hammering will loosen from two or three to as many as ten layers, depending upon the vigor of the blows. After all the loosened layers are removed the process can be repeated.

The layers are torn off in long narrow strips about three-quarters of an inch wide and rolled up tightly. In this form they can be stored indefinitely. All that is necessary to render them pliable and fit for weaving is to soak them in cold water for an hour or so. They will then become very pliable and withstand almost any amount of bending and twisting without cracking or breaking. In fact before wire came into use for the purpose it was common practice in some parts of the country to use ash splints for tying hay bales.

### UNTREATED SPOTS ON PILING

Users of creosoted piling have occasionally been greatly puzzled on observing shipworms boring through heavily creosoted wood. Experiments with sheathing creosoted timbers with untreated planks have demonstrated that if the microscopic larva can get a start in the untreated wood the worm which develops becomes resistant to creosote poison and can bore into the heavily impregnated wood. If there are any spots left untreated on piling and wharf timbers they will permit the young shipworms to obtain a foothold and eventually destroy the whole timber.

# PARASITIC ENEMIES OF TREES AND PLANTS

By Dr. R. W. Shufeldt, C. M. Z. S., etc.

(WITH PHOTOGRAPHS BY THE AUTHOR)

OF all the various lines of study and research in natural history none is more interesting than that branch of general botany dealing with abnormal plant growths that are the result of injuries caused by insects. Many are more or less familiar with them as they occur

History came to be published his readers found it stated therein that a gall on a tree was produced at night, and by some kind of a fly, the larva of which subsequently ate up the gall. Others of those times believed this, while still others claimed that tree galls were the home of certain worms or spiders. Prophecies of what the ensuing year would have for people of the times and of events that would come to pass, were based upon such data—that is, whether worms, spiders or flies were to be the more numerous during that particular year. The matter did not rest here, however, although for a long time some very ridiculous notions about galls on trees and plants were rife. For instance, a poet, who was also a doctor of medicine—one Redi of the 17th century, held that all trees and plants were endowed with a soul—a vegetable soul—and that that phytological phantom was not only responsible for flowers and fruits and all their



GALLS DESTROYING A FLOWER

Fig. 1—This quite unique illustration shows a specimen of Black-eyed Susan (*Rudbeckia hirta*) in its last stages of destruction by masses of dark green galls, each as big as a horse chestnut.

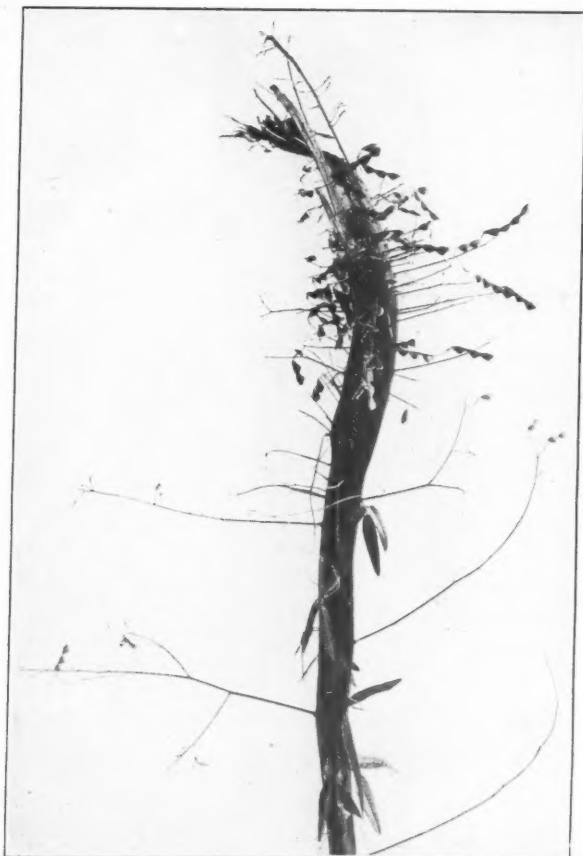
on the twigs, leaves and other parts of trees and plants, for they are conspicuous objects when seen in the forest and elsewhere at various seasons of the year, from early spring to late autumn. They have long been known to foresters and students of plant pathology as galls. Even as far back as the days when Pliny wrote, that is, along in 50 to 60 A. D., that famous naturalist of antiquity had paid some attention to them; and when his Natural



TICK TREFOIL SHOWING HYPERTROPHY

Fig. 2—Hypertrophy in plants is not a common disease, and the case here shown is one of extreme rarity. It is the only specimen discovered by the author after rambling through North American woods and fields for more than half a century.





STRANGE DISEASE OF PLANTS

Fig. 3—Another view of the manner in which hypertrophy attacks a tick trefoil showing the seeds distinctly. Note how curiously the stem is enlarged.

parts coming into existence, but that galls, with everything that was to be found in them, were produced in a similar way, that is, through the agency of the "vegetable soul." The fact will be appreciated that these early students and observers had never noticed the female insect deposit her eggs in such places on plants and trees as where the galls subsequently appeared; so it was contended by many that she deposited her eggs in the ground about the roots of trees and plants, and that, later on, the eggs thus lain were carried by the sap of the plant or tree up into the leaves, twigs and small limbs; passing along as far as they could, they finally lodged, and galls formed in those places as a consequence.

Along in 1760 a closer observer and more intelligent writer appeared in the field. I refer to the Italian naturalist, Filippo Arena, who had given to the world some useful facts on the cross-pollination by insects in the case of plants; but he carried the discovery too far when he claimed that trees and plants produced galls, in that the insects that came from them might be sufficiently numerous so that cross-pollination should not fail during any particular year for the lack of a supply of those insects responsible for it.

Finally the true cause of a plant gall was announced, and this by the Italian anatomist and microscopist, Marcello Malpighi, who, towards the close of the 17th century, pointed out that galls on plants and trees were caused through the punctures made by certain insects; and that as swellings they were due to those punctures, just as swellings on our own bodies result from the sting of bees or other insects capable of inflicting a venomous wound. Here the matter now stands, little having been added to Malpighi's theory during recent years, although the subject has been investigated and extensively contributed to by not a few able writers. At this writing, hundreds upon hundreds of plant galls are known, and have been more or less fully described by the various investigators of the subject. They are now known to occur on plant growths of every description, even many fungi coming in for a share of them. Few are aware of the fact that potatoes are merely fungus galls on the roots of that plant; and others of them on our leguminous plants are chiefly responsible in producing the nitrogen of the air, in that it may be utilized by growing plants.



A LEAF-CROWNED STEM OF A GOLDENROD

Fig. 4—Not only does goldenrod exhibit the curious condition here shown, but it likewise often presents elongate galls on the stem of the plant, as illustrated in another figure.

Few, very few, of the galls caused by insects on plants are of any use to us—indeed, those occurring on oak trees are practically the only kind that possess any economic value, they being used commercially in enormous quantities in the making of various inks, and in the processes of dyeing and tanning.

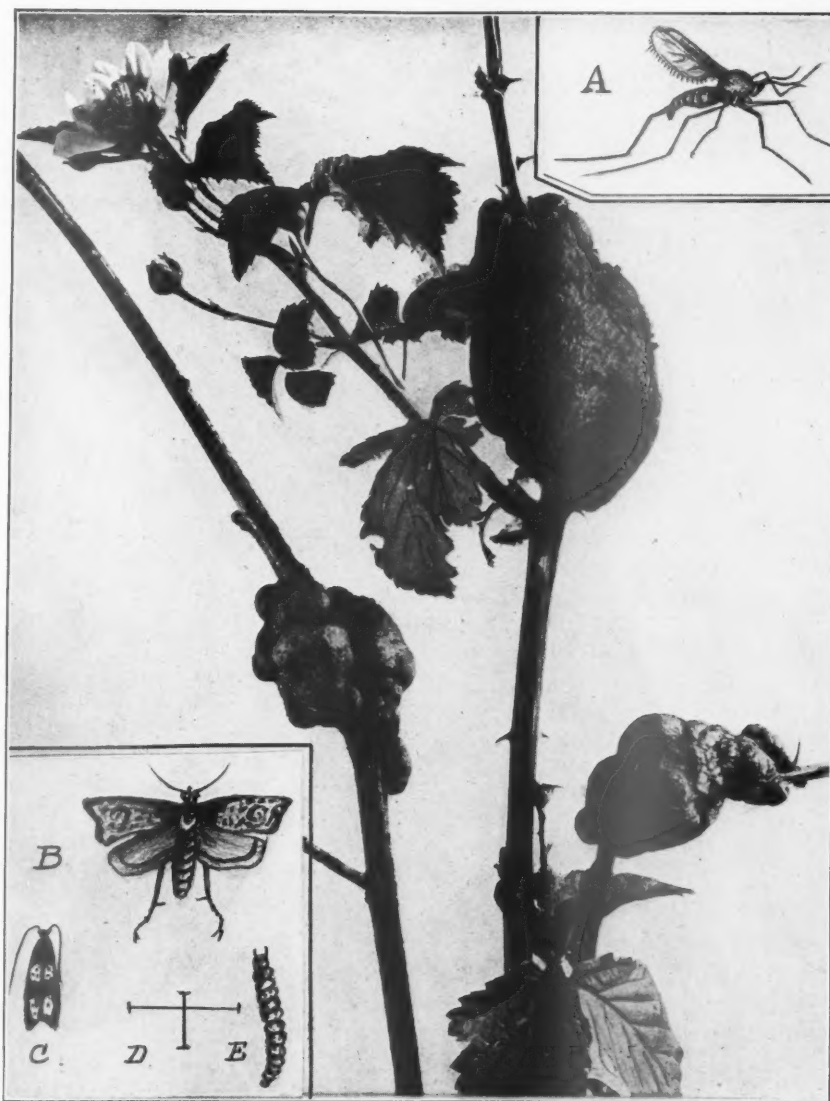
The study of these varied and curious excrescences especially appeals to foresters, to zoologists, and to botanists, and for the very good reason that the field contains so much that has, as yet, in no way been worked out; it actually bristles with problems unsolved. Then too, we are compelled to study them, in that we may derive the necessary knowledge to properly care for and protect our useful as well as ornamental plants. Again, a knowledge of them is essential to the student of food products in the plant world and their cultivation, as not a few of them are nothing more than fungus root-galls, those of the legumes being of bacterial origin.

Galls are produced by insects belonging to very different orders, in so far as their classification goes. Various genera of mites produce some of them, as do beetles, scores of flies representing upwards of twenty genera, not to mention the *Hymenoptera* or Saw-flies, especially those of the family *Cynipidae*, in which we have

about fifteen other genera, those of the genus *Cynips* having been most exhaustively studied.

Dr. Frank E. Lutz, in his excellent little work, the "Field Book of Insects," states that "if the galls are inhabited, a clue to the makers may be gained by a study of the inhabitants. Mites have four pairs of legs, at least when full grown; no wings; and are very small.

Aphids have three pairs of legs, and they sometimes have no wings. Galls made by both of these groups are usually open. Saw-flies have thoracic, and usually distinct abdominal legs; their galls usually have a large hollow on the inside. Gall-making lepidopterous larvae have thoracic but no abdominal legs. It is not so easy to distinguish *Hymenopterous* and *Dipterous* larvae; and it should always be remembered that galls may be inhabited by creatures which did not make them—parasites of the makers and also inquiline, 'guests' which avail themselves of the abundant food, but do not directly injure the maker of the gall.



BLACKBERRY GALLS GREATLY DISFIGURE THE PLANT

Fig. 5—All parts of a blackberry bush beyond the site of the gall invariably die, while, close to the gall healthy stems are to be seen. One of these, bearing buds and a blossom, was present, as shown in this particular specimen. Insert cuts: A., Gall-gnat (female), a species of *Cecidomyia*, about natural size; it makes galls on some of our annual plants. B., The Misnamed Gall-moth (*Paedisca salignana*). C., The same with closed wings. D., Natural size of B. E., Larva. This species makes galls on the goldenrods.

Some galls are complicated communities. We speak of creatures 'making' the galls; the plants really do this, acting on some (not understood) stimulus furnished by the animals. It is exceedingly curious that insects which are so similar that they may be distinguished only with difficulty cause such different and distinctive galls. In

addition to the unknown chemics of the process, the gall-causing instinct is one of the most mysterious things in entomology."

Galls of various forms and sizes are gathered from many different kinds of trees indigenous to many countries. Thus in commerce we have the Chinese galls, the Bokhara galls, and so on. The best galls yield from sixty to seventy per cent of gallo-tannic acid, and are known as the white, the green, and the blue galls, and the oaks are great producers of them. Sometimes the irritation caused by the presence of the larva is responsible for their existence, while, as a rule, they are produced by a virus deposited by the female when she places her egg. In Asia Minor, Syria, Persia and in adjacent countries, a special species of oak (*Quercus infectoria*) grows abundantly and furnishes the greatest number of galls for the trade. A species of *Cynips* is responsible for their production, and this insect deposits its eggs in the tender shoots of the tree.

We are informed by an authority at hand that "galls are inodorous, and have a nauseously bitter and astringent taste. They are nearly spherical, and vary from the size of a pea to that of a hazelnut. When good, they are of a blue, black or deep-olive color. They are also

termed *nutgalls* or *gallnuts*." According to some British authorities, one of whom is cited in the *Encyclopædia Britannica* (XII., 574), "in the autumn (also on oak leaves) are found those curious flat brownish *galls* commonly called 'oak spangles,' which by many are taken for fungi and have indeed been described as such." And

it was Tennyson who said, in his poem on "The Talking Oak:"

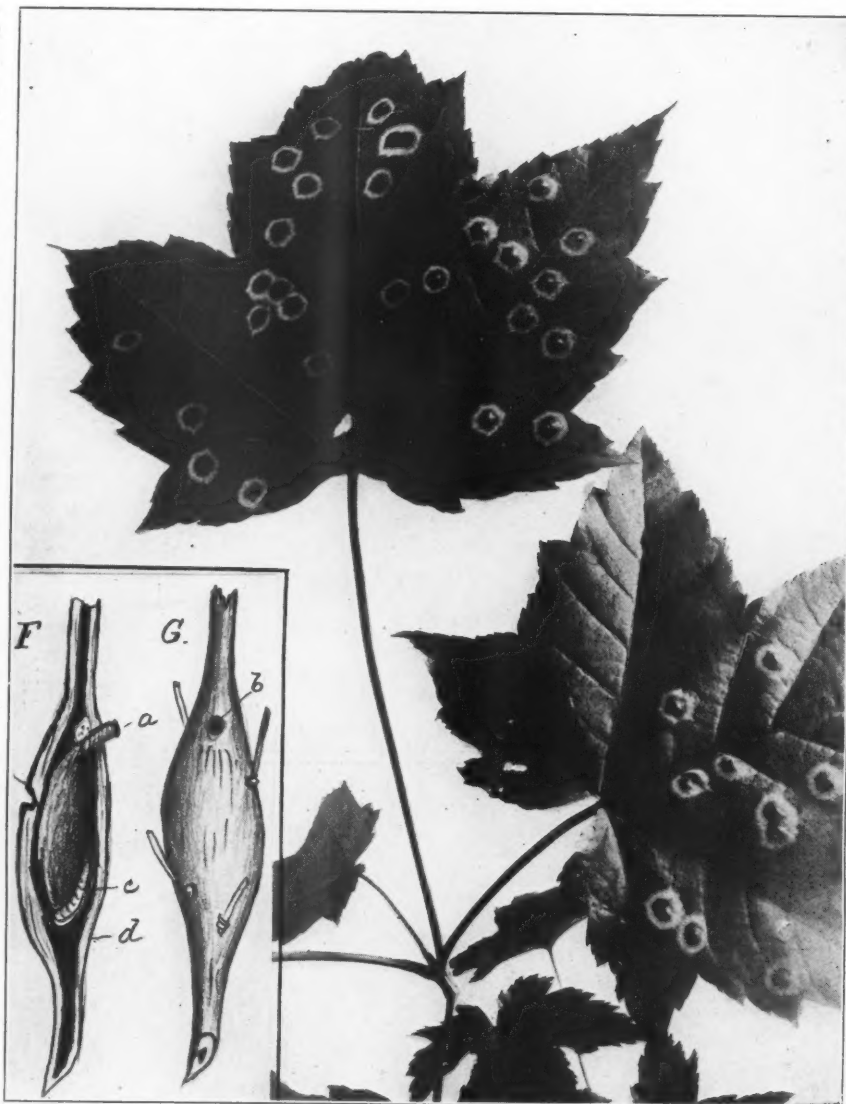
"I swear (and else may insects prick  
Each leaf into a gall)

This girl, for whom your heart is sick,  
Is three times worth them all."

Lutz, in his useful little work referred to above, presents us with some eighty-six cuts, giving various examples of those galls we find on such trees and plants as the conifers, the poplar and cottonwood, the willow, hickory alder, oak, elm, hackberry, the witch-hazel, tulip-tree, maple, sumac, rose raspberry and blackberry, crætegus, cinquefoil, wild cherry, grape, touch-me-not linden and basswood, huckleberry, wild lettuce, goldenrod and ash. They are

extremely characteristic and instructive, and as arranged on the plates, not readily mistaken for another.

Further on I will give some of these growths, reproduced by my camera from the actual specimens; but only a few can be thus presented, for the fact must ever be borne in mind that simply hundreds of these curious



LEAVES OF MAPLES SHOWING RED AND YELLOW SPOTS

Fig 6—So thick are these ocellated gall-spots on the leaves of some maples that they destroy the leafage of the entire tree; a tree so affected may be recognized at a considerable distance. Insert cuts: F and G, Gall on goldenrod made by *Solidago* gall-moth. a, opening; c, larva; d, burrow. C on G opening seen from in front. Redrawn by the author from Riley.



growths are now known to the students of them, have been described, and a very large number of them figured. For instance, over fifty different galls occur on the willow alone, and more than three hundred have been listed for the oak. All these have received their technical, scientific names, and have been duly classified in works on the subject.

In none of the several works before me do I find any description of the galls that occasionally occur on our well-known "black-eyed Susan" or cone-flower (*Rudbeckia hirta*), an example of which I came across some three years ago, in a meadow a few miles west of the National Capital. Upon returning to my home I at once made a life-size negative of the specimen, and a print from it is reproduced in Figure 1. The galls were large, of a dark green color, shaped something like young tomatoes, being bunched in groups of from two to four on the extremities of the stems of the plant, where they destroyed both flowers and leaves.

While botanizing in the same city during the summer of 1920, I discovered a remarkable specimen of trefoil. The plant had a height of some four feet, and was in no way crowded by the surrounding vegetation. Its remarkable stem at once attracted my attention; and I should not have recognized its genus had I not observed that it bore the well-known seed-pods of some species of tick trefoil (Figs. 2 and 3). On the lower part of the plant in Figure 2, quite a number of the leaves show very well; and their lanceolate form, taken in connection with the form and structure of the seed-pods, the locality and so on, it is quite possible that the species is *Desmodium bracteosum*. Recognizing the very unusual condition of the plant, I collected it, or nearly as much of it as would fully exhibit the pathology it presented, and made the two photographs here shown. The specimen was then taken to Prof. Paul D. Standley, the botanist of the Smithsonian Institution, who pronounced the case to be one of "hypertrophy;" but he had never before seen anything of the same character in tick-trefoil. He was not quite certain as to the species, and declined to commit himself on that point. The specimen was accepted for the collection representing plant pathology in the United States National Museum. The superior extremity of this specimen is shown in the reproduction of my photograph in Fig. 2; while in Fig. 3, we have the upper third of the plant, almost down to a point where the disease commenced. This cut exhibits quite a number of the leaves—their form, number and arrangement—to be taken into account and considered. Gray points out in his botany that in *Desmodium bracteosum* the character of the species is that it is "very smooth except the pannicle; stem straight; leaflets lanceolate-ovate and taper-pointed, green and glabrous on both sides, longer than the petiole, the conspicuous bracts and stipules 1.5 cms. long; joints of pod rhomboid-oblong, smoothish." He figures the pods, and they agree, as does the form of the leaves,

with the corresponding parts in the specimen under consideration.

How this condition came about in a specimen of tick trefoil would be difficult to say; and surely it would appear, from what we know of such things, that it was not from the puncture made by any parasitic insect. That such happenings are worthy of record there can be no question; for knowledge of fact is knowledge, quite irrespective of kind, and no one can predict as to when it may prove of value.

Doctor Howard presents us with two or three valuable and interesting chapters on the Gall-Flies; the

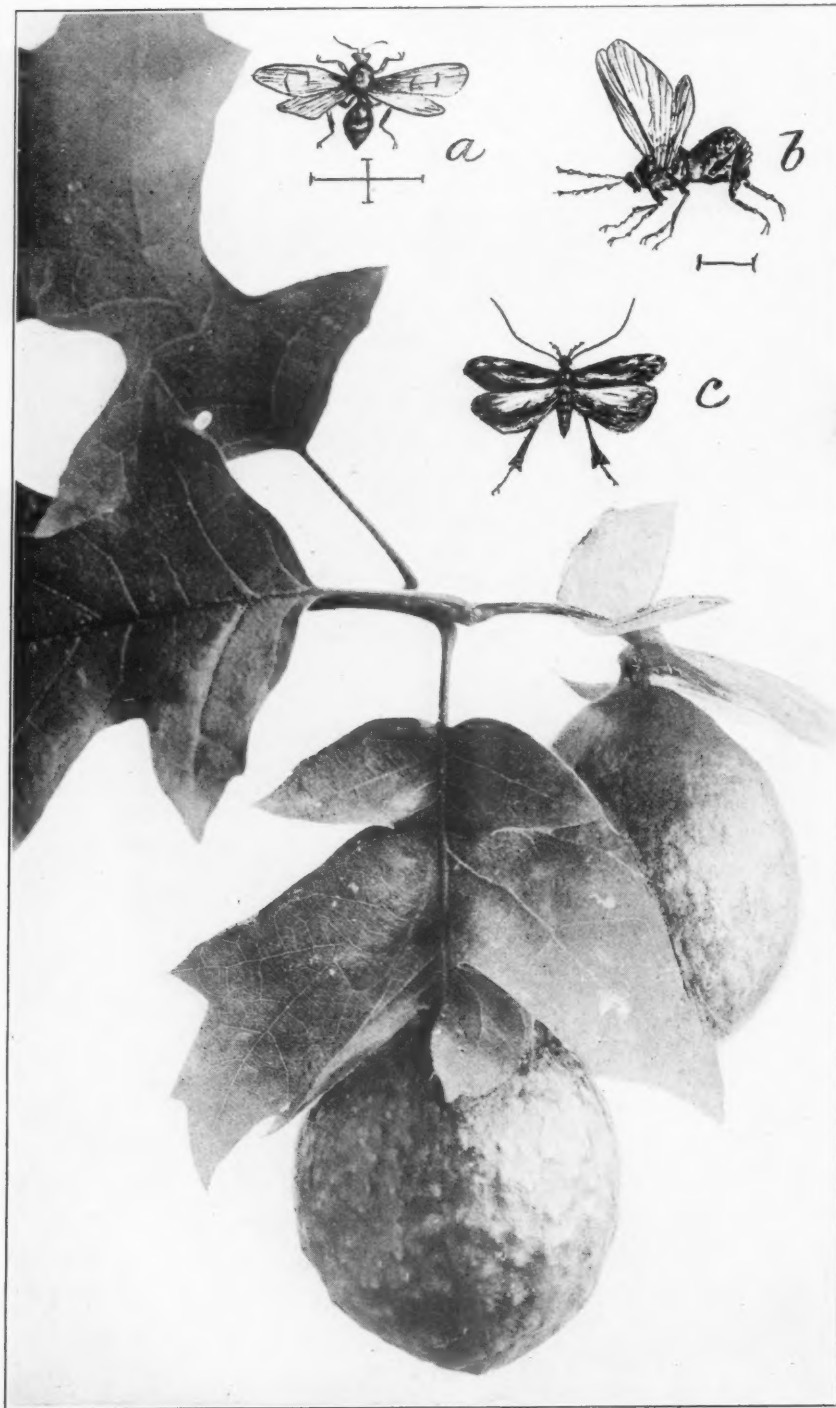


CURIOUS GALL ON OAK TREES

Fig. 7—Several of these galls may sometimes be found on the twigs of the same limb, and they vary considerably in size. The ones here shown are above the average in point of size. Sometimes, as in the specimen here shown, this gall does not seem to destroy the twig to which it is attached.

Gall-Gnats, and the life history of a Gall-Gnat in his work "The Insect Book." In speaking of those *Cynipoids* known as Gall-flies, he says that "those which make galls lay their eggs in the tissues of the growing plant and the larvæ, when hatched, feed upon the plant cells and their contents. A very slight gall deformation may result; but in the majority of cases there is a rapid growth of plant-cells and a curious enlargement of variable shapes which is called a gall.

"The nature of a gall has long been a disputed point.



LARGE "APPLE GALLS" ON LEAVES OF AN OAK

Fig. 8—These beautiful green galls are also called "oak galls" and "oak apples;" they are made by a gall-fly called *Amphibolips coccinae*, here shown at *a* in the insert, with a cross giving its actual size. The interior of one of these galls is *fibrous*. Other oak apples are spongy inside, as seen in Fig. 11. Such oak apples occur on the red-oak or black-oak leaves, while the fibrous ones are confined to the scarlet oaks. The insect shown at *b* is *Amphibolips spongifica*, and it produces the spongy oak apples. *c* (nat. size), another species of gall moth (*Gelechia gallae-solidaginis*), the moth that produces the galls on some of the goldenrods.

It was at first thought that it was a purely vegetable growth and that the little grubs within it were the result of spontaneous generation. Later it was supposed that galls were caused by the punctures of insects and the injection of a poisonous liquid. With the true gall-flies, however, the gall apparently does not commence to form until after the egg hatches. It is supposed that the larva secretes a liquid which causes the abnormal growth of the plant, the plant cells which are most active in growth and subdivision being directly affected.

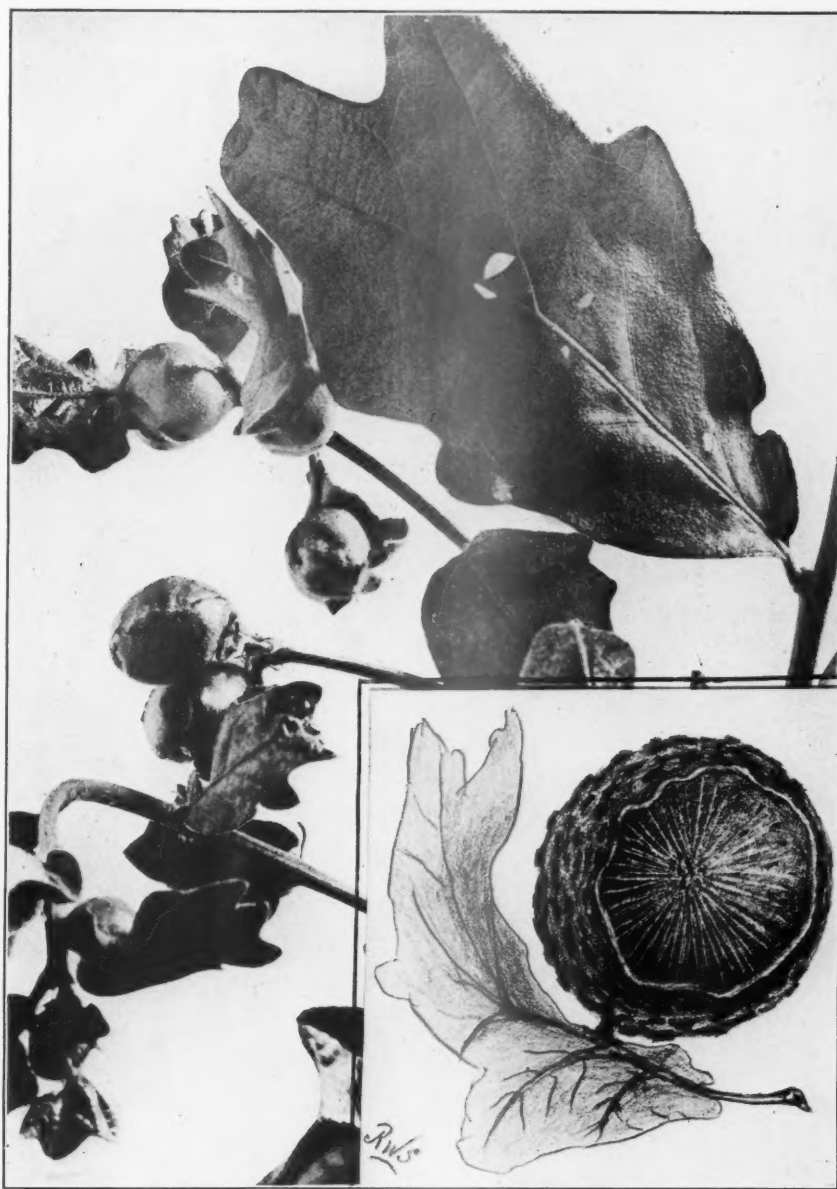
"The egg of the gall-fly is slender, and has a very long petiole which is six to ten times the length of the egg-body, and this is inserted by means of a very long, curiously formed ovipositor. A good account of the method of oviposition reported by Riley from observations made by Pergande will be found in the Proceedings of the Entomological Society of Washington (Vol. iii., pp. 260-263)."

Doctor Howard tells us that "about fifteen hundred species of this super-family have been described," and it must be remembered that that was fully twenty years ago, at which time he further remarked that "the full development of none of the American gall-making *Cynipods* has been studied with the care which this subject should have, and doubtless there are many interesting and important facts yet to be discovered." Be this as it may, Doctor Howard has given us a deal of information about these extremely curious little insects and their ways, especially in regard to the time of their appearance during the year; on the parthenogenetic generation which

is to be sometimes observed among them; that a particular part of the plant attacked is always affected by the same species of fly; and that "the parasitic gall-flies live as true internal parasites in other insects, mainly plant lice and the larvæ of dipterous insects"—together with many other facts. His "Life History of a Gall-Gnat" is brimful of interest, and a well illustrated contribution to the subject, most worthy of careful study. In it he makes the statement that "the most famous member of this group is the so-called Hessian Fly (*Cecidomyia destructor* Say.). This species lives, in the larval state, in stems of wheat, and annually damages the wheat crop of the United States to the extent of many millions of dollars. It is supposed to have been introduced into the United States in the straw brought over for bedding by the Hessian troops during the War of the Revolution. Hence the popular name."

We have often observed those peculiar little whitish galls on the willow trees; they are terminal on the twigs and shaped like small cones—indeed they are known as willow cone-galls. It is said that a minute gnat deposits her eggs on the very tip of the twig she selects for the purpose. Very soon it hatches, and the gnat at once commences to feed upon the material at hand. This causes the growth-arrest of the twig and the stunting of the leaves involved, which latter shrink up to small, scale-like affairs that overlap each other. The grub lives within this snug habitation, occupying it all winter. In the spring it emerges as a minute two-winged fly, a very beautiful little creature when seen through the aid of a high-power microscope. Other insects of small size resort to this gall of the willow to live in it; but they do not seem to interfere with its rightful occupant.

There is a gall which I noticed only on garden and



DESTRUCTIVE GALL FOUND ON OAK LEAVES

Fig. 9—This is possibly the gall known as *Callirhytis capulus*, and is here shown natural size. The specimen was collected by the author in the District of Columbia, within the city limits of Washington; it is not of frequent occurrence. The insert cut is of a drawing made by the author of an "oak apple" that shows the internal radiating fibrous structure. Compare this with Figure 10 on the next page.

wild rose bushes; it appears to be a compound affair—that is, the larvæ occupying it are living in community-style. These galls possess a mossy appearance externally, and are known to the student of them as mossy rose-galls. Some curious ones are also found on hazel bushes and they are well worth attention and study.

During the summer of 1922, while collecting flowers and insects in the woods and fields in the District of Columbia, I ran into many specimens of galls on dif-



ferent trees and plants of which I collected a number and later photographed; several of these are reproduced here as illustrations. One would be surprised to see how many kinds of galls can be discovered and collected in a few hours in such a locality as I have just mentioned. They will be found on various species of trees, especially on the oaks, maples, willows, conifers, and others; while wild roses, blackberry bushes, goldenrod, and other plants will furnish a large number of others. All such specimens I have taken to my home and studied very carefully; and, through the aid of my microscope and many books on the subject, I have learned a good deal about them.

Goldenrod is an especially interesting plant to examine for such purposes, and it has long been known that the plant is subject to the attacks of several species of parasitic insects. One form appears to devote itself to that part of its victim from which the flower stalks spring and the leaves culminate. As a result nearly all of the former drop off, while a most remarkable proliferation of the leaves at the superior end of the "rod" follows—and we have the condition here shown in Figure 4. Another species attacks the stem of this plant, causing an elongate, ellipsoidal swelling to appear, of which authors have presented illustrations in their works. Lutz, in his

"Field Book," on page 472, gives us quite a list of the insect galls found on various parts of the goldenrod, illustrating three of them by pen-sketches on Plate CI.; he makes the statement that "about 150 kinds of galls have been recorded from American Compositae."

Doctor Holland, in his well-known "Moth Book,"

presents us with many valuable and interesting accounts of such moths as attack goldenrod and illustrates them with instructive cuts of the insects and their larvæ, together with specimens of their ravages. Special reference is made to the so-called "Misnamed Moth" (p. 418) the *Solidago* Gall-moth, and others (p. 425).

I have frequently collected the remarkable galls we so often find on the low and high vine blackberries; and figures of them from specimens in my own collection, are shown here on Plate 5. In the case of the low-vine blackberry we often find a roundish gall on the stem as it emerges above ground.

This is at first of a dusky green, but subsequently is shaded with a dull red. In the center it is filled with a pith-like substance containing many little rounded cells. On the high-vine blackberry there is often found a very conspicuous gall that has the form of an irregular, nodular mass like wood—tough and hard. At first this is of a deep green color; but as time goes on it gradually



THIS CURIOUS OAK GALL IS ONE OF GREAT BEAUTY

Fig. 10—So conspicuous is this form in oak woods that it attracts the attention of every passer-by. It is woolly, pure white, and speckled with small pink dots.

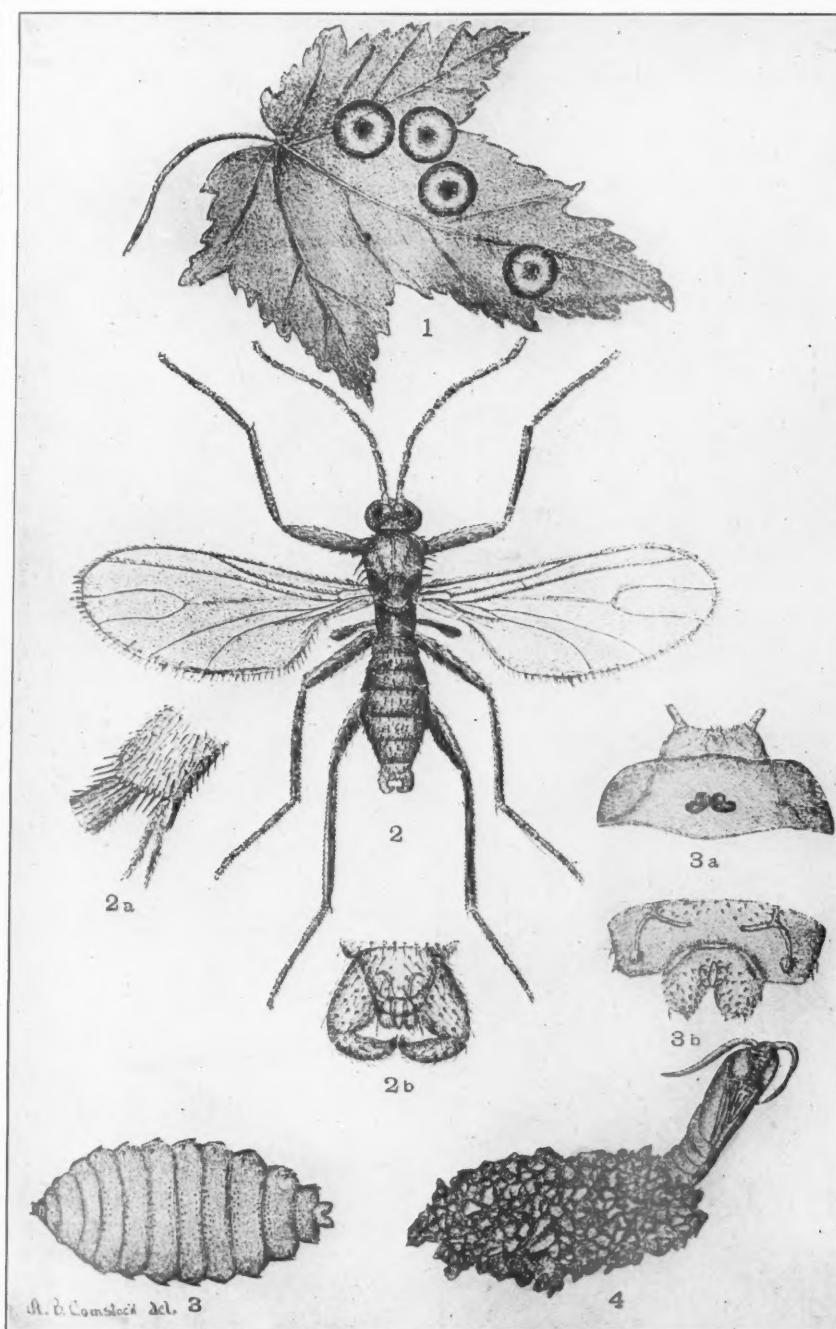
changes to a warm mahogany red, and is not altogether an unpleasing object. (Fig. 5). I have found that the stems of the plant invariably die distad to these masses, but they may live and bear flowers and fruit below them; this is well shown in the big middle one in the plate. On cross section—either way and at any point—one of these masses is found to be quite solid, with perforations here and there that lodge the larvæ of the parasitic insect responsible for the formation of the gall. Not infrequently one of these masses is composed of some five or six longitudinal parts, roughly subcylindrical in form with rounded more or less pointed extremities. They are closely packed together and surround the stem, as illustrated in not a few works on the subject. Still others of these galls are round and nodular, as shown in Figure 5.

Next we come to the beautiful little galls so frequently seen on

the upper side of the leaves in the red maple (*Acer rubrum*). No end of people see these every day as they

pass through the maple woods during the spring and summer months, yet not one person in an hundred can say how they came there. They are well shown in my

reproduced photograph of them in Figure 6, where two leaves of a red maple present the infection. Each of these ocellated spots has a diameter of something like three-eighths of an inch and is brilliantly colored, the center and outer ring being of a bright red, with the included ring a deep, rich yellow. Sometimes nearly every leaf on a red maple may be thus affected and the tree be terribly damaged by the condition while in some instances only a few of the leaves present these galls and the tree does not suffer in any way. In the red maple woods about Washington one frequently finds examples of this condition of the leaves, now known to be caused by a minute insect. Sometimes the spots are of but one color, that is, of a



#### INSECT THAT MAKES THE OCELLATED RINGS ON MAPLE LEAVES

Fig. 11.—Copied by the author from a plate in one of Packard's Reports. The original drawing by Mrs. A. B. Comstock, of Cornell University. (Much enlarged). *Sciarä ocellaris*. 1. Leaf of maple (*Acer rubrum*) with galls; 2. adult, male; 2a, tibial spurs and brushes of same; 2b, claspers of same; 3, larvae; 3a, head of larva; 3b, caudal end of larva; 4, cocoon and pupa skin.

pale green, or, in others, a light yellow. As many as fifty may occur on any single leaf, in some cases being

so abundant as to overlap each other and cover the leaf all over.

In 1881 Professor Comstock very fully described the insect that caused these spots, his account appearing in the U. S. Entomologist for that year. Mrs. Comstock drew the plate for him and this is herewith reproduced in Figure 7. "At the center of each leaf," says Professor Comstock, "may be seen, on the other side of the leaf, an elevated portion. Corresponding to this, on the lower surface of the leaf, there is a pit, within which the larva lives. Larvæ that were partially grown were found to be held in place in the pit in the leaf by what appeared to be a larval skin. This pellicle covers the body entirely, and is with difficulty removed from it; the edges of the pellicle adhere quite tightly to the leaf. Where the larva



GALLS ON OAK TREES AND BLACKBERRY BUSHES

Fig. 12—Shows vertical, median sections of a spongy oak gall (upper) and the blackberry gall (lower). The latter is the specimen shown in Figure 5 above. It is nearly solid in structure, and riddled with cavities for larvae. Both figures natural size.

is full grown, it forces itself from under this skin, which then falls back into the cavity or is pushed to one side, where frequently it may be seen adhering to the leaf. The larva at this time drops to the ground, into which it enters to undergo its transformation." Following this description occurs a very full account of the insect, its

larva, and other important points, all of which is too extensive for quoting in this place, while many of the points described are pretty well illustrated in the plate.

Of all the trees that are attacked by parasitic insects giving rise to galls of one kind or another, probably the greatest sufferers are the various species of our oaks. No part of the tree, be the species what it may, seems to be immune from such conditions—even the leaves developing galls of more kinds than one. We find them not only on the leaves, however; they also occur on the limbs, branches, twigs and fruit. The nature of some of these excrescences are well shown in the figures illustrating the present article (Figs. 8, 9 and others). More than three hundred different galls have been described as occurring on the oaks, and many of these have been illustrated. Very familiar to many are the beautiful green spheres we so often see attached to the leaves. Up to a certain time, one of these will be of the same fine shade of green as the leaf to which it is attached; subsequently it becomes a pale tan color at its distal pole, and this color, in a uniform way, gradually spreads toward the stem, until the entire outer skin of the gall is of the same shade. A gall of this kind is of extremely light weight, and when thrown into water it will float like a cork. Cutting one of them open, passing the incision through its center, the plane of it making any angle with its polar diameter, exposes its internal structure. In some species of oaks the entire interior is found to be occupied by a soft, spongy material, fine in texture, and of scarcely any weight. In the center of this there is a small cavity for the larva, the tissue surrounding it being much darker than the rest. Now, cutting open other galls of this kind from still other species of oaks, we find, instead of this spongy material, a great number of very fine radiating threads, the center from which they spring being the cavity containing the larva. Only a certain proportion of these threads are sufficiently long to reach the inner surface of the gall. Without giving their scientific names, it should be known that these two galls, although having externally the same appearance, have really very different fillings, as just pointed out, and they are produced by insects of quite different species.

Another curious oak gall is scientifically known as *Biorhiza forticornis*, here shown in Figure 7. It looks very much like a wad of raisins squeezed around a twig. Usually it is of a tan color, rather light, while Lutz describes it as being "pale yellow with reddish tinge when fresh. Kernel of each division held by radiating fibers."

In Figure 9 we see still another most destructive gall, found on the leaves of an oak. These have the appearance of green marbles, and are as hard as stones. They completely consume the leaves upon which they are attached—or the larvæ do after they appear. This gall is probably the *Callirhytis palustris* of Lutz, judging from his drawing of a specimen that closely resembles the one here shown in Figure 9.

By far one of the most striking as well as beautiful



oak galls is the *C. seminator* shown in Figure 10; it looks like a little ball of white wool, dotted all over, rather sparingly, with small pink dots. As contrasted with the green leaves, it has the appearance of some fruit or other, and it is sure to attract the attention of the passer-by in the oak woods where it occurs. Often three or four of them are to be seen on some sapling oak only a few feet above the ground.

From what I have endeavored to bring out in the present article, it will be seen that the study of galls is not only a very interesting one but one of decided importance. Most of them can be easily preserved in one way or another in the herbarium, or for exhibition in the public school museum. School children should be encouraged to collect all the different kinds of gall they come across in the woods and fields; to make good photographs of them, and to properly prepare all the insects, moths and larvæ responsible for their appearance. In a very few years such a collection comes to be of value—especially if scientifically and tastefully arranged with all the data relating to it.

*'Tis always morning somewhere, and above  
The awakening continents, from shore to shore,  
Somewhere the birds are singing evermore.*

—Longfellow.

## Famous Trees at Georgetown Convent

EVERY fair graduate of the Georgetown Convent knows these trees, nominated for the Hall of Fame for trees with a history by Mary A. Easby-Smith, historian of the convent alumnae. Mrs. Smith informs the American Forestry Association that this aged Jefferson pecan on the Convent grounds grew from a nut given by President Jefferson, more than a century ago, to Mr. Threlkeld, who formerly owned a part of the Convent grounds. In a letter to Mr. Threlkeld, dated March 26, 1807, Jefferson says:

"Presuming you are devoted to the culture of trees, I take the liberty of sending you some pecan nuts which, being of the last year's growth, received from New Orleans, will probably grow."

The tree is now 65 feet high and measures seven feet in circumference. Two copper beeches which Mrs. Smith also nominates for the Hall of Fame are a landmark in that part of the city. They may be seen from the front lawn of Georgetown College, and from there have the appearance of one big tree with a crown like an immense copper dome.

It is impossible to guess the age of these venerable trees, which have stood as silent guardians of the playgrounds of several generations of Georgetown's fair alumnae. They were in the prime of their strength and beauty during the Civil War, as several of us can attest, says Mrs. Smith, but during the past fifty years they

have suffered from violent storms and the effects of extreme old age. Had it not been for the good work of the tree surgeon they would probably have been destroyed before now. The gnarled trunks are full of old



THE JEFFERSON PECAN IN THE CONVENT GROUNDS

initials and dates, the only one of which we can now decipher is "44." The circumference of the beeches (five feet from the ground) are 13 feet and 11 feet, respectively. One cannot give a real diameter, as they are by no means round. The height is very close to 90 feet, and the combined crown of both is sixty feet. (See page 450.)

## THE WOODS

How good it is to ramble where the winds and water roll  
And the harbingers of Nature with their gladness fill the soul.

THE woods at first convey the impression of profound repose, and yet, if you watch their ways with open ear, you find the life which is in them is restless and nervous as that of a woman; the little twigs are crossing and twining and separating like slender fingers that cannot be still, the stray leaf is to be flattened into its place like a truant curl; the limbs sway and twist, impatient of their constrained attitude; and the rounded masses of foliage swell upward and subside from time to time with soft long sighs, and, it may be, the falling of a few raindrops which had lain hidden among the deeper shadows.—*Oliver Wendell Holmes.*

# BOYS' REFORESTATION CLUBS

By V. H. Sonderegger

Superintendent of Forestry, Louisiana Department of Conservation

**W**HEN the Conservation Department of Louisiana began the establishment of Boys' Reforestation Clubs in the fall of 1921, it started a work that promises to do more for forestry in Louisiana than any of the other agencies it has inaugurated to that end.

The idea of these clubs originated with Col. W. H. Sullivan, of the Great Southern Company, and was the outgrowth of the success of the boys' corn and hog clubs, which have been operated with eminent success in Louisiana for several years. To make a success of the work the Great Southern Lumber Company donated \$500 to be

general interest in the subject, for in reaching the boy the department has also reached his parents and other male relatives and friends, and the neighborhood has received an object lesson in forestry, the effect of which must be far-reaching.

The enrollment of 664 boys in the latter half of the first year of the work was extremely gratifying to Commissioner Alexander and his agents have assured him that during the present year much larger classes will be organized. It was not until August, 1921, that H. J. Stahl was selected by V. H. Sonderegger, superintendent of the forestry division of the department, to take supervisory charge of the clubs, and he at once got in touch with the forest rangers and began the work of enrollment of the boys. The clubs being organized, the forest rangers assisted them in securing plots of ground and the lesson that was stressed in the instruction was fire prevention and fire control. To impress the importance of this factor in the protection of timber in the minds of the boys, they were told that in the distribution of prizes 50 per cent of the points in judging would be allowed for excellence



THE PLOT OF MILLARD PARKS, WINNER OF THE SWEEPSTAKE PRIZE OF EIGHTY DOLLARS FOR THE BEST PLOT IN THE STATE, ALL CLASSES—AT FOURTEEN YEARS OF AGE.

given in prizes, and this sum was placed at the disposal of Commissioner Alexander, of the Conservation Department of Louisiana, who was given complete charge of the work. Mr. Alexander placed the matter in the hands of the forestry division of the department, and the work of forming the clubs was at once begun.

Though the movement was started late in the fall, classes aggregating 664 boys were formed before the close of the year, and in the closing months of 1921 all of these boys received practical lessons in forestry. Each of the boys secured a plot of land between one and three acres, some of the plots being barren, while others bore a second growth. The clubs were organized on much the same lines as the boys' corn and hog clubs had been, and the work has been as successful thus far as the clubs organized along agricultural lines have been. Not only have the boys received practical instruction in forestry, but the clubs have proved an effective way of arousing



PLOT OF ROBERT MAGEE, AGED THIRTEEN YEARS. WINNER OF THE FIRST PRIZE OF THIRTY-FIVE DOLLARS, 6 TO 10 YEARS OLD, LOBLOLLY IN AN OLD FIELD.

in this work. The lads were taught to construct fire lines around their plots as the first lesson in their work, and they were next instructed in the proper thinning out and cleaning of their plots. Some of the boys were quite successful in this work, and the judges who examined each of the plots at the beginning of this year preliminary to the distribution of prizes, declared that some of the plots they examined resembled United States For-

est Reserve plots. Each of the boys kept a complete record of the work he performed on his plot during the period of the session. Most of the boys had charge of from one to three acres of second growth pine or second growth hardwood. Others took plots that were partially seeded or barren and either transplanted seedlings in their areas or planted the seed, thus performing real reforestation. It is the intention of the representatives of the Conservation Department to give more attention in the classes of the present year to this feature of forestry instruction, it being considered more important to make lands lying idle productive than to work on second growth areas.

It may be stated at this point that the Great Southern Lumber Company has again donated to this work, through the Conservation Department, another \$500 to be divided in prizes for the classes of 1922. The work of the larger classes this year will be the outgrowth of experience gained in the first year, for it is to be understood that the department in inaugurating the work in Louisiana had no precedent to govern its activities. These were the first clubs of the kind ever organized, and the work was necessarily along original lines, so far as the instruction of the youth was concerned. As stated, the plots of the boys the past year ranged from one to three

the leaders in forestry work in the United States, and, as said, the establishment of these clubs is the first educational work of the sort in the country. The establishment of the clubs has enabled the Conservation Department to go before the public schools of the state, and to give the faculties and student bodies of these schools an idea of what the department is endeavoring to accomplish in forestry work in Louisiana. Moreover, there is scarcely a public school in the rural districts of the state that is not within reaching distance of one of the plots of the boys' clubs, and school children generally can be expected to take an active interest in the work of their fellows. The first season of this new form of education



PLOT OF JOHN GRAVES—WINNER OF THE SECOND PRIZE OF TEN DOLLARS FOR 21 TO 25 YEAR OLD PINE. THIS IS SECOND GROWTH LONGLEAF PINE ON AN OLD FIELD.

acres. The department plans for the present year contemplate placing equal areas under the direction of boys who seed or transplant areas, while the boys who take charge of second growth plots will have larger areas. This will give the Conservation Department in its work of advancing the cause of forestry around 1000 forestry demonstration plots in the state, and between 2000 and 3000 acres under tree cultivation.

Louisiana has for some years been regarded as one of



THE PLOT OF KARL SCHEXNAYDER, A BOY OF FIFTEEN YEARS, AND WINNER OF PINE SEEDLING CLASS, A THIRTY-FIVE DOLLAR PRIZE.

has proven so successful it can be accepted as an assured fact that forestry is on a permanent basis in Louisiana.

The judging of the work of the boys was done by V. H. Sonderegger, superintendent of the forestry division of the Department of Conservation, and H. J. Stahl, who supervised the instruction of the boys. The classes were under the immediate direction of the forest rangers in the several districts of the State. The sweepstake prize of \$80 was won by Millard Parks, a youth of 14 years, of Washington parish. There were a number of other prizes in different divisions of the work, and to encourage the work, parishes in a few instances appropriated money for prizes for the clubs within their boundaries.

By those concerned with the work of conservation the disposition to be made of the 125,000,000 acres of cut-over forest land in the Southern States is considered one of the most serious problems confronting the people. Some of this land can be brought under cultivation, another part can be used for grazing and stock raising, but there will remain a large percentage that can only be



utilized by reforestation. There is a considerable acreage of land in the coastal plain which in the judgment of the United States Department of Agriculture is absolutely unfitted for agricultural purposes, and this land must be reforested or remain a burden on the hands of the owners or of the State, should it revert to the sovereign through seizure for taxes. In the meantime there is a growing demand for lumber and an alarming falling off in the potential supply. Forests have been razed by lumbermen and others without regard to replacement, in many instances not a seed tree being left standing to start new growth. It has been said that the transient lumberman of the flush days now drawing to a close was like the carpet-bagger of an earlier period, out for what he could take away, and took no heed to the welfare of the community in which he operated. There are indications that this carpetbag policy has undergone a change. When Henry Hardtner, of Urania, some years ago figured that the vast tract of standing timber of his company would only feed the sawmill for twenty-five years longer, he set himself to the solution of the problem of making the business a permanent one. He reached the conclusion that by intelligent cultivation he could replace his forests as fast as the sawmill could consume them. Col. W. H. Sullivan, of the Great Southern Lumber Company, of Bogalusa, after a study of the Hardtner project determined to follow his intelligent lead. Hence the town of Bogalusa, built up by the business of the Great Southern Company's mill, which in a few years reached a population of 10,000, and is still rapidly growing, has been constructed as a permanent settlement, not a temporary sawmill town, such as have sprung up and disappeared in the South in the past thirty years.

Soon after the activities of the northern lumbermen began, 300,000 acres of Louisiana forests were being denuded each year, the lumbermen mutilating trees they could not use and leaving no seed trees standing to secure regrowth. As the more valuable timber became exhausted the lumbermen installed plants to utilize as by-products that which should have been permitted to grow and re-establish the forest. Henry Hardtner demonstrated in his experiment at Urania that if a tree or two were left on each acre the land would be reforested by nature, the only needed aid being the prevention of fires, and, in the case of long-leaf pine, the keeping of the razor-back hog away from the seedlings. The bark of the root of these seedlings is sweet and the hog is very fond of it, and roots up every seedling within his reach. On the other hand the root of loblolly and short leaf pine has a bitter taste and hog leave it alone. Hence new growth on cut-over lands has generally been confined to less valuable timber.

Contemporary with the destruction of the forests there has grown up in Louisiana a lumber business the investment in which, as shown by the assessments rolls, is \$290,000,000, employing approximately 57 per cent of the State's industrial labor. Within a few years this great business will be entirely wiped out, unless reforestation goes hand in hand with destruction. Louisiana

has not been entirely remiss in the protection of her forests. As early as 1904 an act was passed to provide for the protection of the forests of the State, the suppression and prevention of forest fires, and to provide for the reforestation of denuded lands, and for proper instruction in forestry in the public schools, etc. This was an excellent beginning, but unfortunately there were no funds available to carry on the work. In 1920, through the efforts of M. L. Alexander, Commissioner of the Conservation Department, the Legislature passed another law providing funds sufficient to enable the forestry division of the department to employ men in the field, and placing a severance tax on lumber to provide funds for the prosecution of the work. Previous to the passage of this act, Mr. Alexander, by virtue of the broad scope of the law establishing the department, had set aside funds received from hunting licenses, oyster leases, etc., to start the work. The act of 1920, however, made the division self-supporting and has enabled it to place thirty forest rangers in the field to protect standing timber against forest fires. These rangers also spread the gospel of conservation among the people and warn of the danger of recklessly building fires in the woods and grass lands. They warn the people that when the forests go they must pay a higher tax rate to support the government and provide for public improvements. Railroads lines are regularly inspected by the rangers to see that the right of way is kept free of inflammable material, and sawmills are similarly inspected to diminish fire hazards. The people are instructed to aid in the protection of the forests. Owing to the nature of the climate and the quality of the soil, the State Forester believes, if fires can be prevented, the forests will reproduce themselves whenever seed trees have been left standing. In absolutely bare areas replanting will be necessary.

Fires are universally recognized as the great danger and the worst foe of forest conservation. Prevent them, and the standing trees will soon reseed the cut-over area. A healthy pine tree will produce large quantities of seed, each seed germ being provided with a sail, and an ordinary wind will carry the seed a considerable distance, covering the ground around the tree with an average of 250,000 to 300,000 seeds to the acre. In a few months these seed sprout and little trees about an inch high appear. These seedlings will replenish the forest if protected, but they cannot stand fire. Recognizing these facts the Legislature has penalized the starting of fires, either through carelessness or intent, that endanger forest growth, and has required lumbermen to leave uncut and "unbled" for turpentine at least one healthy young tree per acre to reseed the land. It has also passed laws encouraging reforestation, limiting the taxing of lands whose owners enter into contract with the State to set aside the cut-over land for a term of years for the growth of trees.

A few large tracts of cut-over forest have already been so set aside, and other owners are desirous of entering into the contract. That the business of reforestation can be made profitable has been demonstrated. If eight

trees are left on each acre for reforestation and the land is assessed at \$2 an acre, the stumpage value of the seed trees at the end of a 15 year period, at \$5 per thousand feet, will return 5 per cent compound interest on the \$2 investment, and will pay back an annual expense of ten cents an acre with compound interest on each year's cost. Meantime the land has been brought to a vigorous young stand, leaving a period of twenty years before maturity.

In these twenty years there should be a regular revenue through the collection of firewood in thinning out the growth, dependent on the thickness of the growth of the young trees. There are instances where loblolly has cut 10,000 feet per acre after a growth of twenty years. If the present price of lumber is maintained (and the indications are that it will be increased), this would give a return of about \$100 an acre in stumpage.

## THE GEORGIA FORESTRY ASSOCIATION

(Continued from Page 476)

ever, failed to provide appropriations for the work and while the committee was therefore not able to make as exhaustive an investigation as the situation justifies, it has submitted a report recommending specifically the establishment of a permanent state forestry department.

The Georgia Forestry Association is actively supporting the recommendation of the board and has organized the state in a very effective way. The officers of the new association are Bonnell H. Stone, president; A. B. Wood, of Brunswick, first vice-president; Mrs. W. W. Stark, of Commerce, second vice-president; Senator E. E. Snow, of Quitman, third vice-president; W. B. Lemon, of Atlanta, secretary, and C. B. Harman, of Atlanta, treasurer. An executive committee was immediately appointed by President Stone as follows: H. G. Spahr, of the Georgia State Highway Commission; C. B. Harman, secretary of the Southern Sash, Door and Millwork Association; C. S. Ucker, of the Southern Seaboard Airline Railway; Miss Alice Baxter, chairman of the Committee on Natu-

ral Resources of the State Federation of Woman's Clubs; W. B. Lemon, of the Western Electric Company, and Senator Robert C. Ellis, of Tifton.

An advisory board was later appointed and comprises the following: H. C. Fowler, Mrs. Orville A. Park and R. C. Berckmans, of Macon; G. C. Smith, Brunswick; Prof. T. D. Burleigh, of Athens; W. B. Hunter, of Cornelia; Miss Lois P. Bowdle, of Athens; W. H. Beckman, of Albany; Homer Williams, of Albany; W. L. Roebuck, of Cordele; Miss Etta Colcough, of Augusta; Mrs. Max E. Land, of Cordele; Mrs. Albert E. Horton, of Atlanta; Mrs. Lollie Belle Wylie, of Atlanta; William A. Candler, of Atlanta; Alex Sessions, Waycross; Senator E. M. Tharpe, of Townsend; John Riis, of Milledgeville; Max Jasspon, of Savannah; James W. Morton, of Athens; Mrs. C. R. Orr, of Athens; Mrs. Ira C. Farmer, of Thomson; Mrs. J. E. Hays, of Montezuma; Morton Turner, of Quitman; Mrs. M. E. Judd, of Dalton, and Major John Cohen, of Atlanta.



NATURE PAINTED THIS SCENE ON A CYPRESS BOARD

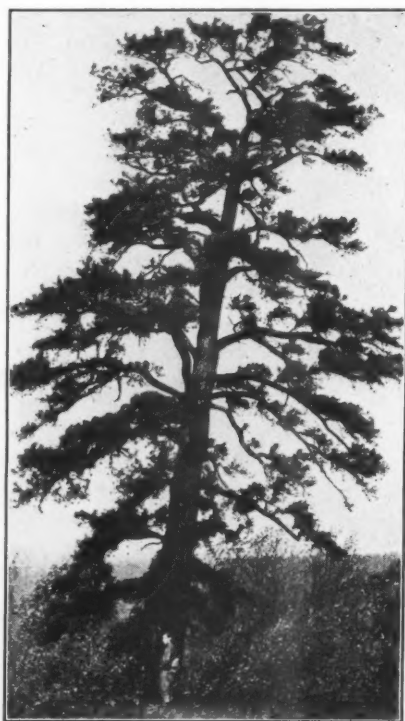
In the lumber yard of the National Lumber Company, in St. Louis an interesting piece of Nature's etching was recently found. The board which has the woodland scene on its surface was found in a pile of lumber while orders were being filled and had been at various heights in the pile for at least two years. The board has every appearance of an etching and shows a typical cut-over forest scene so characteristic of many parts of southern Missouri and northern Arkansas. The natural color of the wood with a slight discoloration gives a hint of twilight hours to add to the effectiveness of the scene.—(Allan P. Child)

(Note:—This Board was found in the yard of the National Lumber Company, Jefferson and Lucas avenues, St. Louis, Missouri.)

## A Word for the Pitch Pine

By J. M. G. Emory

LET us presume that we are on an express train, west-bound from Jersey City and are swiftly flying through the rolling fields of New Jersey. Scattered wood-lots and occasional timbered swamps are rapidly being replaced by a more general forest cover as the train rushes westward. Tall tulip trees, magnificent oaks and other hardwoods crowd to the very track, while deeper in the forest glades dark hemlocks and blue-green pines give the woodland scene a more sombre hue. But as the train twists out into a cleared farming settlement, a new tree, of very picturesque development and of a warm green foliage, stands sentinel-like alone in a rocky pasture. It is a pitch pine, most generally disliked of our eastern evergreens, and yet when allowed to grow unmolested by fire and the human hand, develops into an exceedingly picturesque and interesting tree.



Many very A HANDSOME OLD PITCH PINE IN NEW JERSEY  
tographs have been made using this pine in the composition, often in silhouette against a setting sun.

The pitch pine for real beauty and value can not compare, of course, with our eastern white pine or the red pine, yet there is no other tree which will exist in quite the barren soils and exposed sites that this tree will, and still be of value commercially and esthetically, for the wood of the pitch pine, although coarse and extremely resinous, is very useful. It is very durable in the soil and consequently valuable for posts and poles, and sawed into rough lumber, makes flooring of a very durable nature. The pitch pine also yields crude turpentine of very fair quality, and before the great pineries of the South were exploited, this pine supplied the turpentine, pitch and tar of the country. In the olden days pitch pine was used to some extent as fuel, and torches were made from the resinous knots.

Since pitch pine occurs on the most sandy and sterile

of soils where few other trees can exist, it is of great economic importance. It fixes the sands and prevents them from shifting and over-running more valuable farming land. Moreover, as the years go on, great quantities of needles and debris accumulate on the forest floor, forming a rich humus which makes the production of more valuable trees possible. For these reasons, it seems that the pitch pine fills a position in the production of forest resources which very few other trees could, and therefore is deserving of more careful protection than it has previously been afforded. It should be looked upon as a useful member of the forest family and not a mere, troublesome weed to be eradicated as quickly as possible.

## Trees to Take the Place of Those Destroyed by Blight

By C. H. Thomas

CHESTNUT replacements, the trees which will fill the gaps in Pennsylvania forests caused by the ravages of the chestnut blight, will not be so hard to find as was first anticipated, says Professor Illick, of the State Forestry Department, at Harrisburg, Pennsylvania. Many of the denuded forest areas which were laid bare when the blight finished its deadly work are once more growing new timber producing species.

Not only have students of forestry been encouraged by the number of species which can be substituted for the once numerous chestnut trees in Pennsylvania, but they have a ray of hope that eventually the chestnut trees may be brought back. This hope is based upon the belief held by some foresters that the blight will generate its own antitoxin and that the ultimate result will be chestnut trees with greater power of resistance than those which fell victims to the blight. Until this hope is realized foresters are studying the various substitutes for chestnut trees.

Of the several species found suitable to the soil and climate of Pennsylvania the rock oak or commonly known chestnut oak, because of its close resemblance to the chestnut tree, is destined to play a big part in the reforesting of the areas denuded by the blight. It is now being grown to some extent in Pennsylvania. As a common species of the chestnut, the rock oak has been discovered to grow much more rapidly than was at first supposed. Foresters formerly reckoned its apparent growth upon the rings on the trunk and the growth demarcations on the twigs. Formerly it was supposed that each ring and each demarcation marked a years growth, but Professor Illick discovered, upon close observation of specimens under cultivation on State Forest lands that two or even three growth periods occur frequently in a single growing season. The chestnut oak was found to reach a height of 17.8 feet in a period of 17 years. It showed amazing development in experiments conducted on the State plantation at Mont Alto, although it was in competition with the rapidly growing chestnut tree. The fact developed some years ago that its growth was retarded by the close proximity of the chestnut, was confirmed when the chestnuts were killed by the blight, the rock oak showing an



acceleration in growth afterward. The chestnut oak will replace the blight killed chestnut to a greater degree than any other single species in Pennsylvania for in most places it is the principal companion of the chestnut. Along the base of the mountain slopes in southern Pennsylvania chestnut oak frequently comprises 20 per cent of the stands, while along the middle slope it comprises from 30 to 40 per cent, and toward the top of the slopes and upon the ridges it frequently comprises 60 per cent.

Pitch pine, another close associate of the chestnut, is expected to play a big part in reforesting dry, gravelly and sandy mountain slopes, upon which some of the most exacting trees do not thrive. Like the chestnut oak, the pitch pine grows more rapidly than the apparent growth indicates. The pitch pine has a wide range and is

the most fire resistant forest tree native in Pennsylvania.

Black locust, another associate of the chestnut, is more local than either the chestnut oak and the pitch pine, but is becoming more numerous in the State. Light sandy soil favors the growth of the black locust and it is one of the most thriving species among the mountains of Bedford County. Black oak, pignut hickory, black birch, table mountain pine and Jersey or scrub pine also are helping to fill the gaps left by the chestnut blight. Where the soil is moist, the chestnut replacements will be more complete and satisfactory, nature aiding largely in the work. Companion species of the chestnut found in such soil are more desirable, among them being the tulip, white ash, red and white oak, red maple and white pine.

## WOODLANDS

By Ferdinand W. Haasis

In the southwestern United States on the edge of the desert are to be found certain areas of scattered trees of low stature—cedars, pinyons, Junipers, oaks, etc. These stands are known as "woodlands".

Because of the small size of the trees and the comparatively small number per acre, with the resulting low yields, there has always been some difference of opinion as to whether or not they ought properly to be included within the National Forests. Recently this debate has been actively revived, two articles on the subject having appeared in the "Journal of Forestry" for May, 1921. The following is submitted as a contribution to the dis-

cussion by one to whom it is most familiar.

Bear in mind that these areas have at present considerable value for grazing and as a source of fence posts and fuel, to say nothing of pinyon nuts, and that without administration there is as much danger of destructive exploitation of these resources as there is of the more impressive saw timber stands. Furthermore, many of them are so situated as to have a significance in watershed protection; and no one can predict what enhanced value they may have in the future as sources of wood fibre, etc.

The nomenclature refers to the geologic features of Arizona and New Mexico.

### WOODLANDS

"They're not proper forests",  
"Dear at any price",  
"Ruthlessly eliminate"—  
That's the sage advice.

Harken to my story,  
Sons of Mother Earth,  
Narrow not your vision,  
Learn the Woodlands' worth.

Once in the old Carboniferous basins,  
Fringed by the tall Sigillaria trees,  
Toiling and dying, the myriad corals  
Laid down their limestones in warm shallow seas.

The wash rushing down from the neighboring highlands  
Buried them deep under mud, silt, and sand,  
Then an upheaval and unclouded sunshine  
Gave us a new, barren, desolate land.

Up on the Wingate and Shinarump sandstones,  
Up on the Zuni and Moencopie shales,  
Creeping, possessing, the great stately pine trees  
Offered defiance to lightning and gales.

Then in the course of the following ages,  
Bared by the tumult of torrents of rain,  
Slowly once more came those old pristine limestones  
Up to the surface, a wide-spreading plain.

Cherish, then, the woodlands;  
Bring them to the fold,  
Tree and bush and grass clump;  
Though the critics scold;

The stately, exclusive, particular pine trees  
Looked at the orange white barren expanse,  
Slowly and daintily tried to invade it;  
But failing, rains checked their attempted advance.

Now to the foreground came pinyons and cedars.  
Took up the work that had vanquished the pines,  
Covered with verdure the Kaibab formations,  
Soft'ning their glare and their angular lines,

Sending their armies far out on the desert,  
Wresting the land from the cactus and sage,  
Growing the wood for the fuel and house beams  
Used by the folks of that far-distant age.

Pinyon and cedar still border our pine lands,  
Flanking the forests of sawtimber trees;  
Fence posts and cordwood and pencil stock billets  
Make up a sixth of our wood sales with ease.

Stretching out the bound'ries;  
Keeping clear our goal:  
*National resources*  
*For the Nation as a whole!*

# Tree Stories For Children

## Why the Almond-Tree Blossomed

By Mary Isabel Curtis

**Y**OU like to crack and eat nuts, don't you? Yes, of course you do; and if you and I agree, then you think the almond kernel is the sweetest nut of all. But when you're crunching the firm, white nut-meats do you ever think about the tree from which the almonds come?

If you live in the northern states you very seldom see an almond tree. These trees are timid things and dreadfully afraid of cold, dark winters. They prefer a smiling, sunny country like Italy or California; and there, on every hand, you can see almond trees which flower out in springtime into wonderful pink blossoms, and in the autumn throw down these best of nuts for your enjoyment.

At one time, though, so long ago that no one can remember just when that time was, the almond was quite an ordinary tree. It had no blossoms and no fruit, but just a few green leaves that dropped off in the fall and left it bare. At that time there lived in Greece two children who were the dearest friends and playmates that you can imagine. Phyllis was a slender, dark-eyed little maiden, but though she was a girl, she was as fleet of foot and agile as was young Demophoon, and could play all the games that he liked best. He thought there never had been anyone so nice as Phyllis, and she adored Demophoon. They had such merry times together that they never longed for any other play-fellows, but were as happy as the day was long.

Once, however, Demophoon had to go away for a short time, to see an aunt or cousin who lived a day's journey distant; and while he was gone some most unkind and mischief-making person went to Phyllis and told her that Demophoon was never coming back. Now though poor Phyllis had been lonely without the comrade whom she dearly loved, she had comforted herself by thinking of the happy times in store for her when he came home again. But when she heard this sad news she was overcome with sorrow and dismay. The more she thought about it, the more she felt that she could never live without Demophoon. At last, in an excess of grief, she tried to kill herself, but the gods, in pity, would not let her really die. They changed her into an almond-tree beside the brook where she had often played.

About this time Demophoon, having finished his visit, came home and learned with horror what had happened while he was away. He hurried to the almond-tree that had been Phyllis and, flinging his arms around the tree, he shed bitter tears and called to his dear playmate:

"Oh, Phyllis, how could you believe that I had gone away forever? You know I loved you far too well to even think of such a thing!"

And Phyllis heard and answered him. For as he spoke, the tree burst forth into a thousand blossoms which at first were white, but, as he watched them, turned to a most beautiful and joyful pink.

Demophoon had made her happy again; and she has remained so ever since.

If you have ever seen an almond-tree in blossom you know that it is one of the happiest sights upon this whole, round earth.



### PEACE-TIME USES OF SITKA SPRUCE

Although Sitka spruce may never again be so eagerly sought and so extensively cut as during the war, it has so many superior qualities in the opinion of foresters and lumbermen that it will always play an important part in the lumber industry of the Pacific coast region. It grows rapidly, makes a large yield to the acre, lends itself fairly well to forest management, and produces a wood which has high value for many special purposes, prominent among which is the manufacture of paper.

The greater part of the virgin forest in which Sitka spruce occurs has not been reached by lumbering operations, according to Department Bulletin 1060, Sitka Spruce: Its Uses, Growth and Management, a new publication of the United States Department of Agriculture, prepared by N. Leroy Cary, forest examiner. Until recently the cut was relatively small. Sitka spruce was not well known in the world or national markets until an extraordinary demand for it arose during the war because of its superiority for airplane construction.

The total stand of Sitka Spruce in America is estimated at 40 to 44 billion feet. More than one-third occurs in Alaska, one-third in British Columbia and the remainder in Washington, Oregon and California. It does not ordinarily grow in pure stands, but must be logged in conjunction with other timbers—with Douglas fir, western hemlock, and western red cedar in Washington and Oregon, and with western hemlock in Alaska.

Sitka spruce forms only 1.5 per cent by volume of the total merchantable stand of timber west of the Cascades in Oregon and Washington. In British Columbia it comprises 6.7 per cent of the timber along the coast. Of the coastal forests of southeastern Alaska it forms about 15 per cent. Approximately 50 per cent of the entire stand of Sitka spruce is in private ownership.

In Washington and Oregon, the cut of spruce increased more than 50 per cent in 1918, practically all this was Sitka spruce. The cut in the United States increased very little, and in general is declining. For a number of years Maine was the leading spruce-producing state, cutting chiefly red spruce; but the pressing need for spruce aircraft lumber for war uses stimulated production in the Pacific Northwest to such an extent that in 1918 Washington took first place with a cut of more than 275,000,000 board feet. Oregon was second with a cut of more than 215,000,000, while Maine dropped to third place.

The varied qualities of Sitka spruce fit it for a wide variety of uses. It is the premier wood for the manufacture of aircraft. It is unsurpassed for pulp and is especially adapted for musical instruments.

It is also a desirable wood for boxes, crates, barrels, veneer and woodenware.

Copies of the new bulletin may be had free upon application to the department at Washington, D. C.

### A GOOD FIRE RECORD

Major R. Y. Stuart, the State's Chief Forester, presented a detailed report on the spring forest fire season to the State Forest Commission at its June meeting. He reported Pennsylvania's situation as follows.

"The record shows fewer fires reported than in the spring of 1921 and substantial progress made in other respects under the system of protection put into effect by it last fall.

"One of the remarkable, but expected developments from the Department's new system was the service rendered in detection from the steel fire tower, of which fifty were erected last summer and fall. Over 80% of all fires reported were detected and reported from the Department's towers. When the increased number of towers contemplated are constructed it will be possible to thus detect promptly practically all fires.

"Another striking feature of the spring fire season was the promptness with which fires were reported and reached by the crews. This was possible through the close and efficient cooperation rendered the Department men by local individuals and organizations, and by members of other Departments."

### GYPSY MOTH ESTABLISHED IN CENTRAL CONNECTICUT

Winter and spring scouting by the Bureau of Entomology of the United States Department of Agriculture, and State entomological forces shows that the gipsy moth is established over the entire central part of Connecticut. The new territory is as large as all the known infested area in the State up to this time. The area affected is that through which the main railroad lines run from New England into New York City, and the spread of the pest toward the great port is closely watched. It has now reached the New York State line in northwestern Connecticut.

### WOOD IMPERVIOUS TO DECAY

THE wood of the mangrove tree which grows abundantly in French Guiana, is said to be impervious to rot; at least, it has not rotted under the severest tests given it for four years by a French railway company. The grain of the wood is so close that it practically excludes moisture and it has the further protection of a large amount of tannin in its composition that prevents the invasion of insects and protects it from mold, damp, etc. Its discovery is important, especially to users of railway ties and telegraph and telephone poles.



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## CANADIAN DEPARTMENT

By ELLWOOD WILSON

On the 28th of May the flying boat of the Laurentide Air Service, accompanying a sister ship on its way to northern Ontario, discovered several serious forest fires. On returning to Grand Mere, these were reported to the writer. On the morning of May 31st a flight was made to locate the fires, ascertain the damage done and to plan for the control of the fires. Almost immediately the plane was in the air, smoke could be seen in heavy clouds to the north, and within an hour the scene of the first fire was reached. It seemed literally to be eating up the stands of conifers, and flames could be seen rushing up the trunks of the trees and rushing on before the wind. The fire was seen to have a front of about six miles, then there was a gap and to the west another fire with a front of fourteen miles was burning and sending up a barrier of smoke so dense that one could not see across it. The smell of smoke was distinct at five thousand feet. The areas already burned were noted and the plane pushed on to the nearest point where fire-fighters could be obtained and landed. The boat used for landing during the previous season had been taken away so that it was necessary for one of the crew of the plane to swim ashore with a line for mooring. The plane was refueled and the Company Depots were notified to send men by canoe immediately to the scene of the fire. We heard that the Manager of the Fire Protective Association was on his way to take charge of the work, having left about ten in the morning by automobile. The plane had left at 12:30 and had arrived at the district headquarters, after looking over the fires at about two. The Manager hove in sight about four. He was immediately taken up in the plane to look over the situation and at eight that evening the plane started back to the base. About nine it was becoming too dark to land comfortably at the base so we dropped down at a Club and spent the night. The situation as seen from the air was so serious that a meeting of the Fire Protective Association was held and immediate steps taken to improve the service. All the fires but one seemed to have been set by men hunting, fishing and trapping in the woods, of whom there were many owing to the scarcity of work. The Fire Protective Association directors went to Quebec and met the Executive Council of the Government and the Premier and asked that the law, passed at the last session of the legislature, empowering the Minister of Lands to forbid all persons entering the forests without first securing a permit, be immediately put in force. The Cabinet, after the hearing, immediately issued an order-in-council requiring everyone going into the woods to

obtain a permit and the priests in all the parish churches were asked to give out the notice at the following Sunday service and the order was published in the newspapers. Men were appointed in all the towns and villages near the forest to issue the permits. The Government of Quebec is much to be commended for passing such important legislation and for the promptness with which the situation was met and the law enforced. From the 31st of May until the 10th of June the plane patrol was continued. Messages were dropped, ordering men on the drive to go and fight fire. The Fire Inspector in charge of the district was flown over the fire daily so that he might see how best to fight it, all the men fighting one fire were kept in provisions which the plane carried in, and men to take charge of the fire-fighting crews were taken to and from the fire by air. The fires this season have demonstrated that men traveling in the woods as patrolmen in canoes do not discover fires soon enough and are not able to visit their territory often enough. Also that fires can only be controlled by men who understand how to fight them, and who are willing to put their whole hearts and souls into the work. The idea that a fire once started cannot be extinguished is wholly erroneous and is but a confession of weakness on the part of the man holding it. Lookout stations, supplemented by air patrol, with planes to carry men, provisions and fire fighting equipment and to direct the fire-fighting will very soon make disastrous forest fires things of the past if the personnel is right.

The first plantation of Norway spruce made by the Laurentide Company in 1914 has begun to seed and the seeds will be collected and planted to ascertain if they are fertile. A plantation of Scots Pine made in 1908 seeded in 1917 and trees from that first seeding are now about three feet high and growing nicely. Much white pine growing in eastern Quebec is subject to attacks of the white pine weevil and this has spread to plantations of Norway spruce and Scots pine, but has been controlled effectively by cutting off the infected shoots and burning them, and also by breeding the parasites. On the white pine and Norway spruce the insect commonly attacks only the leaders or terminal shoots, but on the Scots pine the shoots at the ends of the branches are also attacked.

The experience of planting Norway spruce so far, goes to show that it makes good and rapid growth on good soils, particularly if they are moist, but that it is a poor tree for poor dry soils. If the soil is too wet, as in swampy ground, it will not grow at all. White spruce on the other hand

seems to thrive in almost any situation, particularly the variety with needles of bluish-green color. In planting Norway spruce great care must be taken to see that the main root is not bent, otherwise the tree will thrive for a time and then suddenly die off.

The first number of a very good forestry journal in French has just been issued by the *Société générale de Publication Ltée*, of Quebec. Its object is to popularize forestry, to encourage reforestation and forest protection, to develop local industries dependent on the forest, to encourage the proper use of the forest and the planting of trees along the highways. Articles on road maintenance, ornamental trees, uses of wood, court decisions and legislation of interest to owners of woodlands, and diseases of trees make up the first number. The magazine is illustrated and very well gotten up. Its subscription price is \$2.50 in the United States and \$2.00 in Canada.

The Dominion Forest Service is extending its experimental cooperative forest work and many sample plots are being laid out this season to determine the results of different methods of cutting in both coniferous and hardwood stands. The result of both clear and selection cutting on the reproduction will be studied and also how much of the overwood in mixed and pure stands should be removed to get the best reproduction. Experiments will also be tried by removing undesirable species and trying to foster the growth of the more desirable ones. Plots have also been laid out in natural reproduction where the young trees are thinned out to different distances apart to see what results can be obtained.

The purchase by the Hollingsworth and Whitney Company of timber lands in New Brunswick shows that American interests are looking to the future and buying lands in Canada to provide for the time when their American holdings shall become exhausted.

The Government Commission which has been investigating the management of the Department of Lands and Forests of Ontario, has recommended a reorganization of the Department on a business basis and Premier Drury is reported to have said that such a reorganization would be made.

The forest fire situation in British Columbia is the worst in years and the Forestry Service is having a very difficult time to get the fires under control.



Panorama of part of Weyerhaeuser operations at Cloquet, Minnesota



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## BOOK REVIEWS

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A valuable guide, full of practical information both for the experimenter and beginner in nut tree culture and for the professional and commercial nut culturist, for it embodies the presentation of a simple, new method of grafting, overcoming many of the obstacles attending nut culture under the older, more difficult methods. Nuts having been established now as a staple article of diet, anything pertaining to the extension of this line of food supply would be a welcome contribution to our literature and Dr. Morris certainly offers this in his book. It is most interesting as well as authoritatively written and is well worth reading.

*The Minds and Manners of Wild Animals*, by William T. Hornaday (Scribner's), New York. Price \$2.50.

It has been well said that no naturalist of the rank of Dr. Hornaday has ever brought together in a systematic and logical relation such an extraordinary mass of information on his subject as this volume includes and, best of all, it is based on his own actual personal observation during a life of hunting and collecting in all quarters of the world. It has commanded the attention of naturalists the world over and affords the lay reader a clear understanding of animal intelligence in a way which will claim and hold his interest.

*Trudy and Timothy and the Trees*, by Bertha Currier Porter. (Penn), Philadelphia. Price \$1.50.

A story full of interest for girls and boys from seven to twelve years. Trudy and Timothy tell of their trip to Washington and the big trees—how they met the forester, what tales he told them, how the President of the United States bowed to them and how the We-Four-No-More club saved Aunt Theresy's old trees is all delightfully described. You'll like it—there is no question about that.

*Shade and Ornamental Trees of California*, by Merritt B. Pratt, State Forester, California.

Dedicated to the memory of the late State Forester of California, G. Morris Homans, a pioneer of forestry in the State, its *raison d'être* being the stimulation of tree planting in California, a more perfect tribute would have been difficult to find. Mr. Pratt tells of the trees of California and pictures them so beautifully that pride in the publication cannot be confined to Californians—it must be shared by every citizen of the United States. The information the book contains is clearly and interestingly written and the pictures tell their own story.

### A BOOK ON DECAY

Thirty-five of the more common wood-destroying fungi are illustrated in "The Decay of Ties," by C. J. Humphrey of the Forest Products Laboratory. This book contains eight full page plates, three of them in natural colors, fifty-eight illustrations in all and gives descriptions of all the fungi presented. A simple key for field use in their identification is given as well as information concerning their relative decay producing power. This is a valuable book for wood preservers, tie producers, lumbermen, inspectors, forestry students and anyone else at all interested in the decay of wood. It gives a great deal of specific information not likely to be found elsewhere. It is bound in flexible covers and contains 35 pages.

### MEMORIAL TREE PLANTED FOR MAJOR REED

As part of Memorial Day observance, in Pocatello, Idaho, a tree was planted at the entrance to the beautiful campus of the Idaho Technical Institute in memory of the late Major Fred R. Reed, the "father of reclamation in Idaho."

The dedicatory remarks were made by Guy Flenner, who succeeded Major Reed as head of the Idaho Reclamation Association.

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Trees have been planted for the following and registered with the American Forestry Association, which desires to register each Memorial Tree planted in the United States. A certificate of registration will be sent to each person, corporation, club or community reporting the planting of a Memorial Tree to the Association.

## EUFAULA, ALA.

By Hinton Holleman Post, American Legion: John Asbury Boswell, Robert W. Brannon, Porter R. Doughtie, Hinton W. Holleman, Daniel Thomas Tully.

## WASHINGTON, D. C.

By Mr. H. T. Domer: Rev. Samuel Domer, D. D., Mrs. Lydia Louisa Domer. By Mrs. Mary M. North, Henry Norman North.

## BROOKS, GA.

By Civics Committee, Woman's Club: Mr. Albert Posey.

## BURLEY, IDAHO

By Woman's Club: Henry Fenstermaker, Willis W. Bray, Earl Galliher, Earl Sims, Orville Snodgrass, Ralph Gouchner, Oscar Pierce, George Chatburn, Loren Ward, Irvin Belkman.

## ALEXIS, ILLINOIS

By Woman's Club: James Harvey Scott.

## AURORA, ILL.

By East High School: Henry Bogar, Raymond DeHart, Joseph Denney, Jefferson Hassett, Herbert Klink, Earl Muladore, Louis Weilandt, Edward McCormick, Fred Ries.

## BISHOP HILL, ILL.

By F. R. Peterson: Erniel Johnson, Rudolph M. Nordeen, Wilbur L. Hagberg, Fred Chester Peterson.

## CHICAGO, ILL.

By Mr. Ernest C. Nagel: An Illinois Boy. By Charlotte Senkpiel: Richard Stange. By Oakland Methodist Episcopal Church: Edwin R. Franz, Walter H. Walter.

## DEHAVAN, ILL.

By Delavan Lodge, No. 319, Knights of Pythias: Tim R. Mitchell, Joseph Franklin Devore, Otis Herbert Kirchert.

## GIBSON CITY, ILL.

By Teachers and Graduates: William E. Brotherton, Arthur W. Neidermayer, E. J. Leilac, Arthur Kessler, for Those who Returned. By Post 568, American Legion: Those Who Died in Service. By Knights of Pythias Lodge: Those Who Died in Service.

## GILMAN, ILL.

By Knights of Pythias Lodge: Fallen Heroes of World War.

## GRAYS LAKE, ILL.

By Mrs. Anna Binckley: Herbert Binckley.

## HAVANA, ILL.

By Woman's Utility and Interest Club: Julius Trimpe, Raymond H. Pfetzing, Paul Markley, Carl A. L. Koch, Horace S. Marshall, Harry A. Sargent, Harry L. Atwater.

## JOLIET, ILL.

By Louis Joliet Chapter, Daughters of American Revolution: Dr. William E. Harwood. By Woman's Club: Unknown American Soldier.

## NEOGA, ILL.

By Neoga Civic Club: Guy Wilson, Horace Lindley, Leonard McAllister, Max Pugsley, Hedric Rhodes, Leon Latimer, Ralph Swank, Howard Votaw, Don Colbert, Carl Bell, Ray Wilson, James Douglas, Tony Miller.

## OKA PARK, ILL.

By Daughters of American Revolution: Lloyd Havens Ghislin, Edwards Hall Berry.

## PLANO, ILL.

By Plano Women's Club: John Fletcher Steward.

## RARITAN, ILL.

By Mrs. Jennie M. Melvin: To Our Boys.

## STRONGHURST, ILL.

By Community Club: Stronghurst Soldiers.

## WILMETTE, ILL.

By Post 46, American Legion. Allyn T. Anderson, Franklin B. Bellows, Louis M. Bruch, Alfred J. Francisco, Henry C. Herbon, Douglas T. Hoffman, Robert P. Irvine, Eugene B. Jones, John P. McArdle, William C. Pope, George V. Seibold, Cedric A. Smith, Rev. Edward J. Vattman.

## WYOMING, ILL.

By Wyoming Cemetery Association: Harry B. Dixon, Harley J. Gilfillan, Clarence Gridley, William J. Ault, W. Henry Townsend, Benjamin McDaniel.

## KNOX, IND.

By Perry McCain: Roy E. Newell, Columbus H. Shilling, John E. Good.

## LA GRANGE, IND.

By Tuesday Club: Soldier Boys of La Grange County who gave their lives.

## WHITING, IND.

By Whiting Junior High School: Walter John Kleiber.

## GLADBROOK, IOWA

By Alpha Study Club: Don Holden, William McTurk, John Ehrig.

## KNOXVILLE, IOWA

By Service Star Legion: Boyd Tucker, Sherman Baty.

## MAPLETON, IOWA

By Mapleton Consolidated Schools: Elvin Reed, Henry Richtemeier, Uhl Hansen, Willet Hasbrouck, Forrest Johns, Loren Hollister, Harry Otto.

## RENWICK, IOWA

By Harvey McPeak Post, 289; Lowell Carter, George Britt.

## WELLMAN, IOWA

By American Legion Auxiliary: Vernon Palmer, Galen Sittler, Charles Polton, Merton Topping, Albert Miller, Ray Lash, Cloyce Adams, Spanish-American War Veterans, Civil War Veterans.

## FAIRFIELD, MAINE

By Past and Present Club: Miss Frances Cate.

## ALPENA, MICH.

By Alpena County: Revolution Soldiers, Civil War Veterans, Spanish-American War Veterans, World War Veterans.

## PHILADELPHIA, PA.

By Civic Club: Francis X. Comley, William M. Comley, Arthur Triol Eissing, Lt. Joseph Simpson Ferguson, Lt. Carl C. Glantz, Sgt. Harry Ireland, Sgt. Edward W. Baird, Jr., Lt. W. C. Rock, Lt. J. Russell Rock, Bartlett Armbruster, James Barnes Arnott, Harold Dewey Atkins, Alfred Lowe Bailey, John T. Baker, Jr., Joseph B. Baltz, Malcolm Weir Bartlett, Col. H. I. Bearss, Corp. Archibald Wight Benners, Norman Paul Boggs, Thomas C. Boston, Lt. George Bower, Jr., Harold S. Boyd, Corp. Horace Super Breining, Norman Branson Brown, George Butterworth, Jr., Charles Y. Butterworth, Charles H. Button, Ellis P. Clark, Jr., Harold B. Clift, Greer Cromley, Corp. Harry Davis, Bernard J. Devlin, Charles Edwin DeVoe, Edward Dorsay, Corp. Howard Dorsay, William F. Driscoll, Lt. Joseph F. Driscoll, Leon F. Driscoll, Corp. Edward T. Dyer, Elmer Joseph Eggert, Waldron R. Farrell, Capt. John H. Fay, Harry James White Field, Hamilton Maxwell, H. Fleming, Neill Fredericks, William J. Given, Sydney Gest, Russell Goner, Lt. Henry L. Geyelin, Jr., Loyal Young Graham, 3d, Abiel J. Groves, Jr., Lt. Percy Glendinning, Robert C. Hackney, Orville Hansen, Paul Hanson,

Hartley, Harry C. Haslett, Corp. Walter A. Hausler, Edward Howard Haws, Joseph Godfrey Haywood, Corp. Charles W. Hewitt, Franklin N. Hewson, Frederick J. Hibbard, Edward Eugene Hickey, Edward J. Higgins, Jr., Albert Mason Hoffer, John T. Erwin, Clyde Dalton Johnson, Philip A. Josberger, George F. Jervis, Jr., Sgt. Clement Kite, Joseph B. Kite, Sgt. J. C. Garrett Lewis, Corp. Leonard B. Lilley, Corp. Daniel J. Little, Norman Sydney Lomas, Ulysses E. Lutz, Wayne G. Lyster, Frank S. Morgan, Jerome Marks, Maj. Emile P. Moses, Corp. F. D. Mueller, George J. McCarthy, Corp. Charles P. McMenamy, Corp. William, O'Brien, Lt. Charles Paget, Paul Parker Plessner, Corp. John Hare Powell, Sgt. N. Anderson Prichard, Joseph Francis Quinn, John Harrison Quinn, Theodore J. Rausch, Richard J. Reardon, Sgt. Thomas Roberts Reath, William Reid, Russell L. Richards, George Clayton Rogers, Corp. Howard C. Ruderow, Joseph Young Sanderson, Richard Schreck, Joseph W. Schwab, Sgt. Joseph H. Shuman, Jr., William J. Spang, Jacob Stoll, Ernest G. Saunders, Elmer C. Tarves, Corp. Robert L. Tatem, Corp. Clarence Taunt, Sgt. Corwin B. Taylor, Lt. Sydney Thayer, Jr., Charles W. Titus, William Ross Torrence, Walter M. Trout, Thomas A. Vahey, Harold L. Watkin, Corp. Frank Weir, Lt. Errol White, George A. Whitely, Edward Thomas Willis, Corp. Frank E. Wolfkill, George E. Woolston, Sydney Grier Gest, Brig. Gen. Littleton W. T. Waller, Maj. Littleton W. Waller, Jr. By Caroline Earle White: Memorial of Humane Sunday and Kindness to Animals' Week. By Mrs. M. W. Halvey: Mrs. Caroline Earle White. By Mrs. Samuel Hinds Thomas: Miss Adele Biddle. By Mrs. O. W. Kulling: Mrs. Anna L. Lowry. By Miss Leta L. Sullivan: For Third Liberty Loan. By Miss Katherine Bregy: Sgt. Joyce Kilmer. By Dr. John P. Garber: Dr. Nathan C. Schaeffer, Miss Sydney Biddle, Miss Katharine Biddle. By Mrs. A. O. J. Kelley: Mrs. Emmeline Reed Bedell. By Miss Elaine Sullivan: Mrs. Albert L. Hoffman.

## FOND DU LAC, WIS.

By Kiwanis Club: Major A. M. Trier.

## MILWAUKEE, WIS.

By Milwaukee County Chapter, American War Mothers: Those Who Died on Land, Those Who Died on Water.

## OGDEN, UTAH.

By Memorial Committee of Service Star Legion: Herman Baker, Alexander L. Brewer, Fred T. Cannon, Delbert Clark, Earl L. Cobb, John Doles, George H. Draper, Oliver R. Drysdale, Arthur Duffin, Leonard Guy Farley, John S. Ferguson, Anderson J. Fredson, Herbert E. Fowers, William B. Fowles, Albert W. Goddard, Fred D. Grant, Clayton B. Griswold, Ralph Hall, Raymond M. Holmes, Frank A. Isaakson, David E. Jespersen, Guy Johnston, Joseph Leo Jones, Marvin L. Jones, Bert Jorgensen, Demetrios Karvarites, Henry R. Kramer, George Liddell, Harry F. Malone, Frank W. Medell, Bert R. Miller, Walter A. Monson, Joseph C. Muir, John Mulder, Hugh Neville Parkes, Alvin L. Partor, William Price, Jr., David J. Rankin, Arthur Regan, Edward J. Rice, Orville J. Ruby, Fred C. Schmaltz, James Shaw, Glen O. Stallings, Arthur P. Thomson, Thomas Lewis, P. Alonzo Thomas, Don Crandall Wade, J. Blane Wall, Merle Wheelright, Joseph C. White.

## TOWN AND CITY STREET TREES

Oaks are considered by the United States Department of Agriculture to be the best trees for street planting. It is probable that oaks have not been more widely planted because of the prevalent belief that they are slow growers, and because in the North they are rather difficult to transplant. A white oak, however, which is one of the slow-growing varieties, will reach the same height as a sugar maple in the same period of time, and maples have been used much more widely than oaks for street ornamentation, despite many unsatisfactory characteristics.

Farmers' Bulletin, No. 1208, Trees for Town and City Streets, by F. L. Mulford, horticulturist, issued by the United States Department of Agriculture, describes in detail the various oaks for street use in different regions, as well as about 100 other trees or varieties. Elms are given second place in desirability for city streets and sycamores third. Maples are considered less desirable than has been generally supposed. Except the Lombardy poplar most varieties of poplar are not recommended.

The bulletin, which is available upon application to the United States Department of Agriculture, contains a regional map of the United States and indicates which trees flourish best under the climatic conditions of each region.

## BEAUTIES OF WHITE PINE

How the white pine, at one time America's premier lumber tree, combines the faculty of being ornamental as well as useful is demonstrated in a new United States Department of Agriculture single reel motion picture, "White Pine, Beautiful and Useful."

The new white pine film is replete with picturesque woodland scenes and contains much material of historical importance. Many famed colonial homes, which have weathered the elements for more than a century, tribute to their construction, became subjects for the camera in the filming of the white pine story. Among them are Longfellow's home at Cambridge; Hawthorne's famous "House of the Seven Gables," the "Witch's House" at Salem, around which a chapter of American history is written; the oldest wooden house in America at Dedham, Massachusetts, built in 1636; Christ's Church, Cambridge; the beautiful Lake George region and the pines of Kittery, Maine. Historic Mount Vernon and scenes about the Nation's Capitol at Washington add to the educational and pictorial value of the new Government cinema production. A warning of the dangers of the ever lurking blister rust, deadliest enemy of the pine, is sounded.

The United States Department of Agriculture will lend the film to exhibitors, free, for short periods, and will authorize the purchase of copies at the production cost of approximately \$37 each.

## THE PLANTING OF TREES

By Albert Stoll, Jr.

The planting of a tree is an act of faith. Faith embodied in a work of this kind is an exemplification of a most simple and genuine belief in the fertility and productivity of nature; a belief based upon the inexorable example and mute evidence uncovered along the by-ways and pathways of the out of doors; that nature will rear to healthy maturity any living thing that finds comfort, contentment and existence in her domain.

This is the same faith that laid the foundation of all agricultural development the world over.

In forestry, as in no other endeavor, this faith is often sorely tried. With a constant fear of the merciless, devouring forest fire; the unrelenting efforts of the invading army of millions of injurious insects; the terrific devastation of fungus growth and diseases; all arrayed against the growing things of the open and faced by the realization that a timber harvest comes but once in a generation; the incentive for the individual to put into practice reforestation or the planting of a tree, is invariably to be found at a low ebb.

However, the planting of trees on a great scale in America and in Michigan particularly, is an economic necessity. Trees give shelter to man and beast. They protect and preserve our water supply. They prevent soil erosion. They provide food and clothing for millions of Americans, by providing them with work. They build all our homes, our ships our factories. They protect our crops and keep fertile our lands that without their aid would soon become desert areas. They beautify the out of doors, ever inducing you and I to play in their domain. Trees are the very foundation of our progress and our lives; without them, the broad expanse of this much cherished country of ours would be a land of desolation and barrens.

The planting of a tree is an act of faith. Reforestation is the amplification of this faith. May it take deeper root in the being of every patriotic citizen of this State.

## ENGLISH WALNUT THRIVES IN WISCONSIN

JOHN AHLE, melon grower and resort keeper of Lake Noyebay, Marinette County, Wisconsin, planted an English walnut on his place in 1903. While the walnut is an unknown tree in upper Wisconsin, Mr. Ahle was satisfied it would grow. His friends were skeptical, declaring that even if it did grow he would never live to pick nuts from it. As he was at the time about 40 years of age, he was somewhat in doubt himself. But the nut germinated and a green shoot appeared and thrived, and Mr. Ahle is now reaping the reward of patience. He picked nuts from the tree in 1917, just 14 years after he planted the nut, and this fall he expects to harvest a quantity of nuts.

## AMAWALK NURSERY

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## Pleasant Things Taken from Letters to the Editor

"Permit me to state that I feel that there is no greater work of conservation being carried on today than that of the American Forestry Association."—*J. M. Paige.*

"I am glad of this opportunity to express to you my keen appreciation of the splendid work which the American Forestry Association is doing."—*Andrew J. Peters.*

"The Forestry Club at the University of California wishes to continue its subscription to AMERICAN FORESTRY for 1921. We find it of invaluable service and interest."—*University of California Forestry Club.*

"I love trees too well not to renew my subscription to AMERICAN FORESTRY."—*Eliza G. Clarke.*

"I think the December 1921 Number of AMERICAN FORESTRY the best that you have produced."—*H. F. Kean.*

"I don't see how I could do without AMERICAN FORESTRY. I look anxiously for each number."—*Laura Lively.*

"Cannot do without AMERICAN FORESTRY."—*Elizabeth T. Owen.*

"The May issue of AMERICAN FORESTRY has just been received and certainly has a wealth of interesting material in it."—*Horace M. Albright, Supt., Yellowstone National Park.*

"AMERICAN FORESTRY is excellent propaganda, and we are glad that it is accessible to the hundreds of young woodcrafters who come to Culver for our summer schools."—*A. R. Phinney, Librarian.*

"You are making a beautiful and helpful magazine."—*Miss J. E. Hussey*

"Let me take this opportunity to tell you how highly I value AMERICAN FORESTRY. It is always so well gotten up and your text matter is always so up-to-date and so interesting that I never fail to look forward to each issue."—*H. A. Lamb, Editor Agricultural Digest.*

"We thoroughly enjoy *American Forestry* for it is full of interesting information, has many suggestions and brings the refreshment of the great out-doors into our home."—*(Mrs.) F. G. Van Kirk.*

We subscribe to your magazine and find it most valuable in our work in botany and I personally enjoy the whole magazine very much."—*E. R. Viault.*  
Instructor of Botany.

"I cannot too forcibly express my appreciation for the splendid interest and active assistance you are giving us in our attempt to bring about, through education, a real public sentiment in favor of a forestry policy for Georgia."—*Wm. J. Rudland.*

"*American Forestry* is in all respects a splendid periodical and our forests could not wish a more beautiful and efficient champion. The magazine passes from my hands to the McClellan Hospital at Cambridge, where its wholesome outdoor atmosphere and its realistic illustrations exert a quieting and healing influence. Also, the patients, having read the magazine, when they recover their health, will be disposed to conserve our trees and forests."—*Chas. A. Ingraham.*

"I greatly appreciate the value of your work."—*Leonce M. Soniat.*

## BECOME A MEMBER

Any person may become a member of the American Forestry Association upon application and payment of dues.

PLANT TREES  
PROTECT FORESTS  
USE FORESTS

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### American Forestry Association

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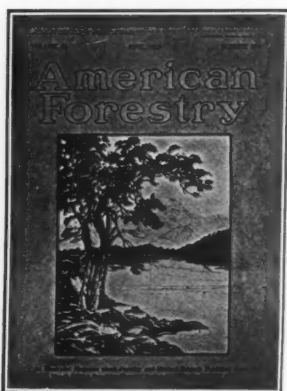
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This is the only Popular National Magazine devoted to trees and forests and the use of wood.

**COMPANY URGES CARE WITH FIRE**

"Be sure to extinguish match, cigar or cigarette before throwing away." This warning now appears on the cigarette packages of one of the largest American tobacco companies and is the first example of its kind in the United States.

Secretary of Agriculture Wallace, in whose department the Forest Service administers its 156 million acres of National Forests, wrote the tobacco company, expressing his gratification over their action.

"The fire danger incident to the use of matches and tobacco," writes Secretary Wallace, "is usually given little consideration by the vast army of smokers. Statistics compiled by the National Board of Fire Underwriters show that the annual loss from fires caused by matches and burning tobacco in the United States reached the impressive total of more than \$73,000,000 during the five-year period 1915 to 1919, inclusive. To this total must be added a considerable percentage of the unnecessary fire destruction in the forests of our country, where each year fires destroy or damage sufficient timber to build homes for the entire population of a city the size of Washington, New Orleans, Denver or San Francisco.

**BURNED FORESTS BUILD NO HOMES**

Every year forest fires in the United States destroy or damage sufficient timber to build houses for the entire population of a city the size of Washington, D. C.; New Orleans, Louisiana; Denver, Colorado, or San Francisco, California, according to a statement just issued by the Forest Service, United States Department of Agriculture, through "Safeguarding America Against Fire," the official bulletin of the National Board of Fire Underwriters. The area burned over each year, it is said, is equal to a strip ten miles wide reaching from New York City to Denver, Colorado.

The publication directs attention to the fact that fifteen years ago the bulk of public sentiment against forest fires was in the East. Today it is in the West, where 61 per cent of the remaining timber supply of the country is located. Over 81,000,000 acres of forest land that were formerly covered with timber are logged off or burned and completely denuded of tree growth. The solution of forestry problems, experts say, lies largely in fire prevention and reforestation.

The National Forests, which contain 498 billion board feet of merchantable timber, or 23 per cent of the remaining timber in the country, are said to bear an important relation to an adequate future wood supply for the nation. These forests are today receiving protection from forest fires and are being cut to a limited extent so as to

maintain a continuous production of new forests.

The fire loss in the National Forests was limited in 1921 to 376,208 acres. A total of 5,851 fires occurred, 75 per cent of which were due to human agencies and could have been prevented by care on the part of forest users. The direct loss amounted to \$212,182 worth of timber and forage destroyed, and \$512,106 was spent by the Forest Service in fire fighting.

Fires in the National Forests of Montana, Idaho, Washington, Oregon and California numbered 3,843, or 65 per cent of the total. In the National Forests of Arkansas and Florida, 354 fires burned over 118,500 acres.

**PENNSYLVANIA'S NEW NATIONAL FOREST**

The purchase of 74,025 acres of land to form the nucleus of the new Allegheny National Forest in Pennsylvania has just been authorized by the National Forest Reservation Commission. Twenty-seven tracts of cut-over and burned lands, on the headwaters of the Allegheny River in Warren, Elk, Forest and McKean counties, were contracted for at an average price of \$2.75 per acre.

"It is less than a year," stated W. W. Ashe, secretary of the Commission, "since authority was given the Federal Government to acquire land for National Forest purposes in Pennsylvania. By protection and systematic management, the cut-over lands so acquired will again be made to contribute to the timber supply of the state and nation, supplementing in this way the forests which the state itself is acquiring and putting under management. Because of its enormous industrial needs Pennsylvania ranks among the first in its timber requirements. Four-fifths of the lumber used by its industries and people is now produced outside its borders. For this reason the people of Pennsylvania are vitally concerned in the upbuilding of productive forests both in their own and in other states.

"There are in the United States 80,000,000 acres of at-one-time forest land now cut-over, badly burned, unproductive and contributing nothing to the timber supply of the country. In addition to being idle these lands tend to augment seriously the flood situation of our great rivers. This condition makes it important for the Government to acquire as soon as possible such portions of this land as most urgently require protection and are valuable as sources of future timber supply. With a view to meeting this condition the Commission has recently recommended an appropriation of \$2,000,000 for the fiscal year 1924 for further purchases."

**ATTENTION, FORESTER**

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen or woodsmen.

**POSITIONS WANTED**

WANTED—Positions by three High School Graduates for forestry work or woods work for the summer. Salary or location no object. Experience wanted. Box 3085, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-22)

GRADUATE LANDSCAPE FORESTER, experienced in both municipal and private forestry and landscape engineering desires position with a municipality or private concern. Address Box 3095, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-22)

"LAND OWNERS, are your holdings burdensome? Perhaps there is a better way of getting an income from them or turning them into cash than has yet occurred to you. It will cost you nothing to talk your troubles over with a LAND SPECIALIST, temporarily unemployed, with 25 years' experience at lumbering, forestry, farming and agricultural organization in the Northwest. Write description of location, topography, soil, etc., in reply." Box 4010, care AMERICAN FORESTRY MAGAZINE, Washington, D. C.

FORESTRY COLLEGE GRADUATE, 22, single, willing and capable, wants work with a forest products company or a research party. Not particular which part of world duties will lead to. Address Box 4000, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (5-7-22)

GRADUATE FORESTER—Experienced; eight years state forest management, four years nursery, landscape and horticultural work, desires connection with firm or individual interested in forests or nurseries for commercial purposes. Address Box 4020, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (6-8-22)

POSITION WANTED BY A TECHNICALLY TRAINED FORESTER at present employed as forest manager on one of the biggest private estates in Pennsylvania; 35 years experience. Can furnish the best reference. Address Box 4030, AMERICAN FORESTRY MAGAZINE, Washington, D. C. (6-9-22)

FORESTER, University Graduate; 28 years of age; ex-service man; several years' experience in the paper industry as an executive, also sales experience, desires position. Best references. Address Box 4040, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (7-9-22)

YOUNG MAN, 32 years old; married; graduate of Cornell University; B. S., 1914; M. F., 1915, with five years' experience in the United States Forest Service. Desires position as forester with a lumber company or private estate. The best of references. Address Box 4050, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (7-9-22)

FOREST ENGINEER, a graduate with eight years experience as chief of timberland department of large Eastern paper manufacturing company is open for position with company operating Eastern spruce lands. Address Box 4055, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (8-10-22)

**WANTED**

WANTED—FORESTERS AND RANGERS to act as District Superintendents and book orders for fruit and ornamental trees, evergreens, shrubs, etc. Pay weekly. Complete equipment. State territory desired. Full or part time. Address Box 3090, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-22)

FORESTERS, UNEMPLOYED OR EMPLOYED, having executive ability and possessing the gift to lead others, to write us. Great opportunity for those that qualify. State age, reference—(2) if employed. School graduated from (years). Confidential. Rangers also answer this. Address Box 66-66, AMERICAN FORESTRY MAGAZINE, Washington, D. C.

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## Bryant's Logging

The Principles and General Methods of Operation in the United States. By Ralph Clement Bryant, F.E., M.A., Manufacturers' Association, Professor of Lumbering, Yale University, 590 pages, 6 by 9. 133 figures. Cloth—net, \$4.50

A discussion at length of the chief facilities and methods for the movement of the timber from stump to manufacturing plant, especially logging railroads.



### A PECULIAR GROWTH

This curious formation in a common European oak, better known as "English" oak on an estate at Newport, Rhode Island, is aptly called "The Little Old Man in the Tree." Photograph by Guy C. Caldwell.

### BIG TIMBER SALE

The Forest Service of the United States Department of Agriculture announces the sale of 235,000,000 board feet along the upper Sauk River, Snoqualmie National Forest Washington, to the Sauk River Lumber Co., N. C. Jamison, president, of Everett, Wash. Areas adjacent to this tract, which are reserved for future sale, contain approximately 1,200,000,000 feet of timber. Under the proposed plan of forest management, the average yearly cut will be limited to 40,000,000 board feet. Forty years will be required to cut out the existing merchantable timber, by which time the present immature timber will be ready for the ax. By the practice of scientific forestry, logging operations can thus be carried on without end. The forests of the sale area consist chiefly of mature Douglas fir, hemlock, cedar and white fir in mixture. The contract price paid for the timber, which is subject to readjustment at three year intervals, was \$2.75 per 1,000 board feet for cedar, \$2 for Douglas fir, and 50 cents for white fir and hemlock.

### LOUISIANA'S SUMMER FOREST SCHOOL

The second annual summer forestry camp of Louisiana started a six weeks' session June 19, with an enrollment of 56 students. Of these, sixteen were high school students, six high school graduates, twelve university students, eight public school teachers and fifteen division of forestry employees of the Department of Conservation. This school has the distinction of being the only practical summer forest school in the South. The Department of Conservation originated and maintains the summer school annually, cooperating with the Louisiana State University for the selection of the proper faculty in teaching the various technical subjects that are necessary to forestry education.

Each Wednesday afternoon lectures are given by prominent State and government officials and business men on various forestry subjects, lumbering and other industries connected with the forestry movement. One feature of the school is that all the employees of the forestry division of the Conservation Department are required to attend this school and take instruction on such forestry subjects as will lead to the betterment of their work in the various districts of the State. Forestry, as a rule, is taught under roofs, and the department's purpose is to teach the science in the open that the student can prepare his work in accordance with the actual conditions that exist in the woods around him.

Though Louisiana has been forging ahead in forestry work for some years, this type of education has pushed the State to the front as the pioneer in the South, and one of the leaders in the national movement.

The camp is situated in the famous reserve of H. E. Hardtner, Urania, Louisiana, the students living in properly constructed and well-floored tents, a commodious mess hall being situated nearby where the students are given substantial food needed by those living in the open, the rations consisting of good camp food, and vegetables secured from the farmers of the neighborhood. The students are divided into two classes—first and second year. In both classes are taught elementary surveying, timber cruising, mensuration, silviculture, and dendrology. It is the desire of the department to acquaint each student with the general elementary knowledge of what forestry really means and thus disseminate this knowledge among the neighborhoods and in the schools from which the students come.

Members of the faculty who have charge of the maintenance and instruction are: Prof. J. G. Lee, department of forestry, Louisiana State University, who is director of the camp; V. H. Sonderegger, superintendent of forestry, Department of Conservation, assistant director; H. J. Stahl, farm forester of the Department of Conservation, instructor; Prof. R. L. Read, formerly of Louisiana State University, instructor.







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